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River Crossings

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Volume 1 January/February 1992 Number 1

RIVER CROSSINGS?

River Crossings is the newsletter of the Mississippi Interstate Cooperative Resource Agreement (MICRA). Beginning with this issue (Vol. 1, No. 1), six issues will be published annually.

The name "River Crossings" attempts to capture the concept that everyone involved in MICRA is, in one way or another, crossing rivers to work with one another.

The purpose of River Crossings is to provide a communication tool and forum for Mississippi River Basin biologists and resource managers to present ideas, exchange information, and discuss issues. As such, input is regularly provided to the Newsletter by resource managers and biologists throughout the Basin.

A major goal of MICRA is to use River Crossings to improve existing and build new communication bridges and cooperative efforts between public and private resource managers having similar management problems. We want "River Crossings" to be interactive with all of it's readers, so we're asking for your input and feedback. Please take the time to fill out and return the questionnaire provided at the back of this issue.

If you want to continue to receive River Crossings, completion of this form will ensure that your name remains on our mailing list. Thank you.

MICRA?

What is MICRA?

MICRA is an agreement entered into by and between the States through which the Mississippi River and its tributaries flow. The Agreement includes the various interested Federal agencies and Federally chartered entities which manage and regulate natural resources in the Mississippi River Drainage System (MRDS) on an interstate basis.

MICRA's purpose is to assess the Mississippi River drainage fishery resources and habitat requirements to protect, maintain, and enhance interstate fisheries in the Basin.

MICRA defines interjurisdictional fishery resources as "those fishery resources that cross or are common to two or more State boundaries and come under the shared jurisdiction of two or more governmental entities." The States have already identified more than 88 major rivers and more than 90 fish species of great concern.

In addition to the Mississippi River, the MRDS includes the Missouri, Ohio, Tennessee, Arkansas and Red rivers, and their tributaries. The System drains portions of Alabama, Arkansas, Colorado, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi,

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"River Crossings" is the newsletter of the Mississippi Interstate Cooperative Resource Agreement (MICRA). It's purpose is to provide a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman, 608 East Cherry, Columbia, MO 65102.

Missouri, Montana, Nebraska, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Virginia, West Virginia, Wisconsin, and Wyoming.

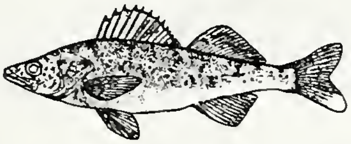
Why MICRA?

The Mississippi River and its tributaries comprise one of the largest and most valuable ecosystems in the world. Fish stocks in these waters are increasingly important to recreational fishing throughout the Basin. Additionally, Mississippi River waters constantly enrich the River's estuarian and coastal distributaries in the Gulf of Mexico. Current research indicates that the Mississippi may be the Gulf of Mexico's most important energy source. The influence of the River's plume can be seen through satellite imagery and through data collected on the ground as reaching far into the Gulf and dictating the reproductive and growth potential of the Gulf's rich saltwater fishery.

Unfortunately habitat degradation and the multiplicity of aquatic management authorities in the Basin complicate and threaten the supply and utilization of these important interjurisdictional fresh and saltwater fisheries. Interjurisdictional fish species move freely between management jurisdictions and create complex resource management problems related to regulation development, licensing, enforcement, and establishment of management objectives.

MRDS waters are host to many such interjurisdictional recreational and commercial fish species. These mobile species encounter many habitats in the Basin that are being increasingly altered by development projects such as dredging and construction of navigation facilities, hydro-electric plants, and flood control dams, and the resultant changed water and sediment transport regimes; and by man's shoreline development activities. At present, information is insufficient to assess how much these alterations have affected the health of important fish populations.

While habitat has been altered or lost, demand for the fishery has increased. This increased demand will be met only if fishery management agencies can respond, and they will only be able to respond adequately if they can work together to perpetuate and enhance these important interstate aquatic resources and habitats.



MICRA represents an unprecedented effort to enhance communication and cooperation between fishery managers basinwide. It provides the opportunity for fishery managers to begin developing fish management plans which address management needs on an ecosystem basis.

How Will MICRA Work?

The State conservation departments having fisheries management jurisdiction in the MRDS have agreed to band together under MICRA and share their resources, facilities and funding for the preparation and implementation of Long-Range Strategic Plans for management of the Basin's interjurisdictional fisheries.

MICRA will not duplicate any existing organizational network. Instead, MICRA will use its coordinative resources to enhance and maximize efficiency of existing programs, institutions, and facilities.

MICRA is managed by an interagency Steering Committee, composed of personnel employed by member States and entities. The Steering Committee is chaired, on a rotating basis, by one of the members. MICRA staffing will be developed, as needed, to fit the on-going mission. At a minimum, a Coordinator/Executive Secretary position and a small number of clerical and support staff will be needed. Most technical work will be conducted by participating States and entities.

MICRA funding will likely come from many sources, including (1) State and entity contributions, (2) Federal and State appropriations, (3) multi-State and entity funding mechanisms, (4) private grants, (5) contributions, and (6) other sources as yet undefined.

The MICRA Strategic Plan will be developed in a step-down fashion. The Comprehensive Plan lays out basin-wide goals, objectives and tasks. This document, developed by consensus of partner States and entities, will guide MICRA's overall development, implementation, and management.

The Comprehensive Plan will be supplemented by Species SubPlans and Watershed SubPlans, which will be coordinated with the Comprehensive Plan, but address more specific fishery and aquatic habitat management problems throughout the Basin. These subplans will be developed by resource managers and planners of participating States and Entities at the field level.

MICRA's operational network and shared data management mechanisms will provide coordination to ensure that the Subplans meet MICRA's overall objectives, and do not duplicate other efforts. MICRA's coordination network and shared ownership will help to ensure broad funding support for all resource management plans throughout the Basin.

MICRA represents a new way of doing business on a large river basin that shows great promise for the future!

MICRA ACTIVITIES

Steering Committee Meetings

The Steering Committee held two meetings during the year. At the May meeting (held in conjunction with the American Fisheries Society, Fisheries Administrator's meeting) in Snowbird, Utah, Wes Sheets, Nebraska Game and Parks Commission, was elected to serve as MICRA's first Chairman.

The Committee also elected a Policy Sub-committee to serve with Sheets to guide MICRA between Steering Committee meetings. Members include: Sheets (Member at Large); Wayne Pollock, Tennessee Wildlife Resources Agency (Lower Mississippi River Member); Larry Peterman, Montana Department of Fish, Wildlife and Parks (Missouri River Member); Frank Jernejcic, West Virginia Department of Natural Resources (Ohio River Member); Jim Fry, Missouri Department of Conservation (Upper Mississippi River Member); and Gary Edwards, U.S. Fish and Wildlife Service (Entity Member). One Entity Member slot was left open to be filled after more Entity participants join MICRA. Jerry Rasmussen, U.S. Fish and Wildlife Service (MICRA Coordinator) was instructed to develop a list of potential Entity members.

At the San Antonio meeting (September), members agreed by consensus to adopt the Comprehensive Strategic Plan, developed over the past six months, as the guide to implement MICRA. That Plan allows for annual updates, as necessary, to meet changing resource management needs.

The Committee also endorsed use of the MICRA logo and brochure for distribution of MICRA correspondence and information. They also directed the Coordinator to develop and begin circulating a MICRA Newsletter.

MICRA
Mississippi Interstate Cooperative Resource Agreement
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It was agreed that letters of invitation should be sent out to some 138 entities (federal agencies, Indian tribes, and power companies), soliciting their participation in MICRA. Anyone wishing a copy of the entity list should contact the Coordinator.

Entity Mailing

Letters of invitation to participate in MICRA were mailed out to some 138 entities in early October. These included federal agencies, Indian tribes and power companies, basinwide. The mailing included copies of our brochure and signed agreement.

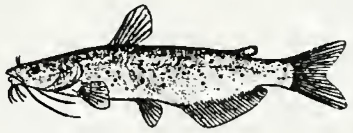
Steering Committee input is needed to better define the role various entities will play in MICRA. Obviously, the entities will have varying levels of interest in the Program, and should play roles suited to their involvement level.

As of early January, the Tennessee Valley Authority has signed on to MICRA as have the Chippewa Cree Indian tribe of Box Elder, Montana, and the Chickasaw Indian Nation of Ada, Oklahoma. Additionally, letters and calls of interest have been received from the Corps of Engineers, Soil Conservation Service, National Marine Fisheries Service, Environmental Protection Agency, Bureau of Reclamation, and numerous power companies.

A briefing for federal agencies interested in getting involved in MICRA will be held in Washington, D.C. later this winter.

Funding SubCommittee Meeting

The Funding Sub-Committee met at the U.S. Fish & Wildlife Service headquarters in Arlington, VA on October 18th to discuss future MICRA funding options. It was agreed to proceed with the proposed joint federal-aid projects for funding State participation and for special projects, including facilitation and coordination of MICRA efforts.



The U.S. Fish & Wildlife Service agreed to continue to fund the MICRA Coordinator position for the foreseeable future. The group also agreed to work with Congressman Gunderson's office on proposed language for an "Interjurisdictional Rivers Bill" that would include funding of MICRA as a "pilot effort" over a three-year period.

The Coordinator was instructed to begin work on a slide-tape presentation for use in promoting MICRA with potential support groups.

Policy Sub-Committee Meeting

A Policy Sub-Committee meeting was held in early December in conjunction with the Midwest Fish & Wildlife Conference in Des Moines, Iowa.

The group endorsed Congressman Steve Gunderson's (WI) legislative efforts to improve interjurisidictional river management, and agreed to work with the International Association of Fish & Wildlife Agencies to iron out their concerns regarding the Bill's potential impact on "State's Rights" issues.

The Coordinator was instructed to contact all Steering Committee members to complete an initial MICRA Task prioritization process by January 15th. It was agreed that all Steering Committee members would participate equally in the prioritization process.

Paul Brouha, Executive Director of the American Fisheries Society agreed to serve in the role of interim Secretary-Treasurer to manage MICRA accounts and pay bills until permanent arrangements can be made.

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1992 Action Agenda

The Steering Committee recommended at the San Antonio meeting that we pursue development of a basin-wide Paddlefish Status Report as our main activity in 1992. As time permits, the Coordinator plans to initiate that effort this fall or winter. This activity would come under portions of Tasks F.1.4(9) and G.1.1(5) of the Comprehensive Strategic Plan.

Cooperative Federal Aid Project

Virtually everyone is faced with travel cutbacks and funding reductions, but MICRA simply can't function without participation, so resolution of this problem is critical to our future.

One approach to solving this problem is through development of a Cooperative Federal Aid Project through the Fish and Wildlife Service (FWS) Federal Aid Program to provide a travel budget for State participation. This effort is being handled by the Coordinator and Dick Wydoski (FWS Denver).

Administrative details will be forthcoming. Hopefully, this approach will help overcome the problem of getting key resource managers and researchers together to address important issues.

MICRA Funding

Long term funding for MICRA operations remains a problem. The FWS has been able to fund the services and office of the Coordinator over the past nine months. Continued funding of the Coordinator position is anticipated in 1992.

Contacts have also been made with both private and public groups, as well as several Congressmen. The MICRA concept is broadly supported, but hard funds have yet to be located. Any new ideas are welcome!

Interjurisdictional Rivers Bill

Congressman Steve Gunderson (Wisconsin) has been a leader in obtaining funding for large river resource management. This began in the early 1980's when he became involved in Upper Mississippi River issues.

Gunderson became the father of legislation that successfully brought the $190 million Environmental Management Program (EMP) to reality on that river. The EMP, the result of a political compromise between environmental and navigation interests over Lock and Dam 26 near St. Louis, will reach full funding levels ($19 million annually) in FY 1992.

More recently, Gunderson drafted and submitted the "Cooperative Large Rivers Fisheries Research and Restoration Act". This Act would implement a research and restoration program for the Colorado, Mississippi, Missouri, Ohio, and Tennessee rivers. However, the bill remains in the legislative process.

Early this year Gunderson began drafting the "National Interjurisdictional Rivers Act of 1991". This bill would evaluate issues and programs on interjurisdictional rivers nationwide to ensure that interjurisdictional river programs are appropriately coordinated and that duplication of effort is avoided, ultimately saving federal dollars.

In the meantime, we have been developing MICRA, and Gunderson has shown an interest in our concept of interstate cooperation, basinwide. In response to his interest, Gunderson has drafted and will introduce a bill that merges his draft National Interjurisdictional Rivers Act with test funding of MICRA. This would also complete some of the preliminary studies needed for the Cooperative Large River Fisheries Research and Restoration Act for the Mississippi, Missouri, Ohio, and Tennessee rivers.

The preliminary studies identified in that Bill and those of MICRA are very similar. Consequently, by funding MICRA as a test project for three years, Gunderson will provide for completion of many of the proposed studies called for in the early implementation phases of the research bill.

This strategy allows the National Interjurisdictional Rivers Act to be completed, without hindering the progress already made by MICRA. MICRA would serve as a test case to see if the concept of interjurisdictional rivers management is even feasible on such a grand scale. MICRA implementation should also satisfy some of the earlier critics of the Cooperative Large River Fisheries Research and Restoration Act by directly involving the States and entities in the planning and decision making process.

The latter is a key to satisfying the States that their management rights are adequately protected. The primary federal interests are in protecting the needs of endangered and threatened species, ensuring proper coordination between federal programs, and in efficient use of federal funding.

Gunderson's Interjurisdictional Rivers Bill was endorsed in concept by the MICRA Steering Committee at the December Policy Sub-Committee as well as by the North Central Division of the American Fisheries Society in early December.

The International Association of Fish & Wildlife Agencies (International) has voiced some concern over the Bill's potential impact on "State Rights" issues. Gunderson is currently working with the International to straighten these concerns out with new wording for the Bill. Gunderson presently plans to introduce his new Bill in late January.

Zebra Mussel Arrives in the Basin

Several zebra mussels were recently collected from the Illinois River near Havana; from the Upper Mississippi River attached to the new Lock and Dam 26 near St. Louis and near LaCrosse, Wisconsin; from the Ohio River near Mound City and Olmsted; and from Kentucky Lake on the Tennessee River.

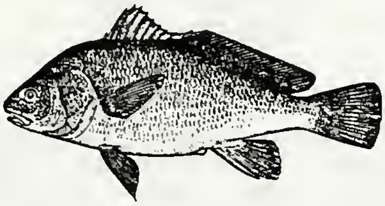
The mussel initially came to the United States from Europe via the Great Lakes in the bilge water dumped from ocean-going vessels. It now seems inevitable that the mussel will find its way throughout the Mississippi River Basin's navigable waterways, since it readily attaches to almost any object, especially metal objects, such as towboats and barges. However, even without barges, the mussel readily attaches itself to recreational boat trailers and boats, making its access to even the Basin's smaller tributaries a reality.

In fact, the mussel will apparently attach to almost any solid object. According to an article in the St. Louis Post-Dispatch, New York biologists, working in Lake Ontario waters near the Genesee River at Rochester, collected a large brassiere in one of their samples with more than 100 zebra mussels attached! According to the article, the large, 4-hook bra remains "under observation" at New York's Cape Vincent Fisheries Research Station!

The mussel's known ability to attach itself to metal pipes and clog water intakes is of significant concern to industrial and domestic water supplies, as well as to boat owners. However, an unforseen, associated impact has been the clogging of large intake pipes with diving ducks! It seems that at some locations in the Great Lakes, diving ducks have been sucked into water intakes while attempting to feed on the attached mussels.

A major concern among malacologists is that zebra mussels could virtually eliminate many of our native mussel species by attaching to their shells and clogging native mussels' siphons. At a recent public hearing in Quincy, Illinois, it was reported that there are not one, but two species of zebra mussels, and that the zebra mussel has reduced the number of native mussel species in the Great Lakes from 14 to 2!

On the positive side, the mussel apparently provides food for bottom feeding fish (such as freshwater drum and catfish) and diving ducks (that is if the ducks can stay out of the water intakes). The zebra mussel also apparently has a history of reaching large population numbers and then crashing. It has, therefore, been suggested that some form of mussel refugia may be needed to ensure that native mussel species survive to be reintroduced after the invading zebra mussel populations "crash".



A zebra mussel information center has opened in Minnesota with a $56,670 grant awarded to the University of Minnesota's Sea Grant Program in Duluth. The Center's goal is to help keep zebra mussels and other exotic species from moving from Lake Superior to inland lakes and rivers. The Center will educate the public, work with industries and cities facing economic losses from exotic species, provide updates on species research and control measures, and provide news media with information on Great Lakes exotics. Further information on the Center and its activities can be obtained by calling (218) 726-8106.

The zebra mussel will also be a major topic of concern at the forthcoming mussel symposium being held by the Upper Mississippi River Conservation Committee in St. Louis, October 12-14, 1992. The symposium is entitled, "The Conservation and Management of Freshwater Mussels. More information on this is provided in the MEETING ANNOUNCEMENTS section of this issue of River Crossings.

Zebra Mussel Insurance?

Do you have zebra mussel insurance? Yes you read it right - zebra mussel insurance!

The Southtowns Walleye Association located on the Great Lakes has drawn member's attention to the possible need for zebra mussel insurance to protect against marine motor engine damage.

The zebra mussel can potentially damage your boat's engine and other machinery which can be affected by the mussels clogging raw-water intakes. Does your boat policy cover this type of damage? Check your policy exclusions. If you find an exclusion for damage caused by "overheating" or "extremes of temperature", you may have a problem. Contact your agent for clarification.

Most boat insurance policies exclude damage caused by wear and tear, mechanical breakdown, and vermin or marine life. Engine damage resulting from overheating when the overheating is caused by internal blockage of cooling water passages by zebra mussels may or may not be covered.

Collections of Pallid Sturgeon and Other Species of Concern in 1991

U.S. Fish & Wildlife Service fishery biologists have netted the first ever recapture of a tagged pallid sturgeon. The fish weighed 22.5 lbs. and was caught on the Missouri River at the mouth of the Little Muddy River near Williston, North Dakota.

The fish was originally captured in February, 1991 on the Missouri River below Ft. Peck Dam by Pat Clancey of the Montana Dept. of Fish, Wildlife and

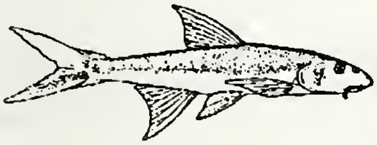
Parks. At that time, the fish was tagged with a disk tag at the posterior base of the dorsal fin and a PIT tag (passive integrated transponder).

However, at the time of recapture, the disk tag was no longer attached. This fish travelled in excess of 150 miles since its release in February. Twenty-seven pallids have now been tagged with PIT tags.

A total of 31 pallids were reported captured by fishermen and fishery field crews in 1991. Hopefully, more recaptures will occur in the future and additional information can be gathered on pallid movement and migration.

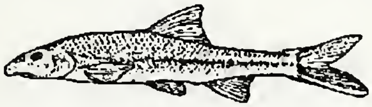
Certain other Mississippi River Basin fish, besides the pallid sturgeon, have shown indication of population decline. It is encouraging to note recent captures of some of these species.

In August and September, two sicklefin chubs (Hybopsis meeki) were captured on the Missouri River near its confluence with the Yellowstone River. These fish are only the second and third sicklefin chubs caught in North Dakota since 1977. A single sicklefin chub was collected by the North Dakota Game and Fish Department in 1990 from White Earth Bay on Lake Sakakawea. The 1991 specimens were caught with a trawl.



Several hundred young-of-the-year (YOY) paddlefish (Polyodon spathula) were observed in Lake Sakakawea, North Dakota around Lewis and Clark State Park. No YOY paddlefish were stocked in the area this year, so these specimens likely represent natural reproduction from upstream on the Missouri or Yellowstone rivers. Stomach contents of two paddlefish were examined and consisted of insect parts, but no plankton.

Fishery biologists, basinwide, should begin (or continue) documenting collections of these and other rare species, such as the blue sucker (Cycleptus elongatus) and sturgeon chub (Hybopsis gelida).



Corps of Engineers May Go To More Contract Dredging

Plans for a new Corps of Engineers dredge to replace the Dredge Thompson, famous for its role in hydraulic channel maintenance dredging on the Mississippi are apparently on hold indefinitely. The Thompson and its crews have played key roles in improving the placement of dredged material to avoid environmentally sensitive areas on the Upper Mississippi River since the environmental battles of the Great River Environmental Action Team in the early 1970's.

A recently released Corps report (Analyzing the Corps of Engineers Dredge Fleet) included the following key findings: (1) There is no evidence that Corps-owned dredges are necessary to support military operations, (2) There is no evidence that Corps owned dredges are necessary to support emergency dredging requirements in the United States, and (3) There are more than enough industry pipeline dredges to satisfy the maintenance and new construction dredging requirements in the United States.

Replacement of the Thompson with contract dredging will not necessarily mean that the flexibility with regards to dredged material placement will suffer. Instead, the flexibility in disposal alternatives will depend upon how well the contract proposals and scopes-of-work for dredging are written. This will undoubtedly mean that biologists will now have to involve themselves in the Corps' contracting process to insure adequate environmental safeguards.

Supreme Court to Rule on State Authority to Set Scenic River Standards

A pending U.S. Supreme Court case could determine the authority that states have in protecting water quality in State-designated Wild and Scenic rivers. The case, *Oklahoma v. Arkansas*, concerns whether a State's federally-approved water quality standards for a designated scenic river extend upstream to regulate polluting activities in neighboring States. Several conservation groups have filed an amicus brief supporting Oklahoma's strict water quality standards.

Under Oklahoma's standards, no activity is allowed to degrade "outstanding resource waters," which include designated scenic rivers such as Oklahoma's Illinois River. One effect is that no municipality in Oklahoma can build a sewage treatment plant that discharges into the Illinois River in Oklahoma.

Oklahoma contends that its standards also apply to upstream polluting activities outside the State. Arkansas, on the other hand, contends that enforcement of Oklahoma's "no degradation" standard would infringe on Arkansas' right to regulate activities within its own borders under its own policies. The Court will examine whether Oklahoma's standards can prohibit the town of Fayetteville, Arkansas from building a plant that would discharge into a tributary of the Illinois.

The case is expected to be decided in the next calendar year.

Niobrara and Missouri Rivers Added to National Wild & Scenic River System

On May 24th, President Bush signed into law a bill that adds 101 miles of the Niobrara and 39 miles of the Missouri to the national Wild and Scenic Rivers System. The Niobrara is a naturalists dream because of its size, location and biological value. A major tributary of the Missouri it is located at the junction of at least five major ecological zones in the Great Plains. The river maintains a wide variety of plant and animal communities and is a major stop-over on mid-continent migratory flyways. It is also a popular canoeing and fishing river.

The Niobrara flows mainly through private land, and support for adding it to the national system came largely from riverside landowners. However, some land owners opposed the action saying it would impinge upon their rights. This opposition stalled the bill for some time, even threatening it with a presidential veto.

The National Park Service is currently in the process of developing management plans for the area.

"Needed: A National Fish Census?"

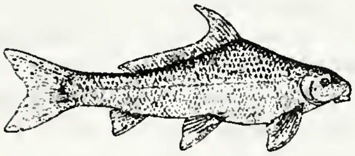
The following article appeared in the September/October, 1991 issue of "The Gazette - A Chronicle of Timely Notes". It supports some of MICRA's concerns, so it is being reprinted here in its entirety as food for thought:

"While the plight of the Pacific salmon, which has all but vanished from much of its range in the rivers of the Northwest, has received wide publicity, less toothsome and spectacular populations of native aquatic species also appear to be declining throughout the West, if not the entire country.

'One report suggesting the scope of the problem was recently published by researchers at the University of California, Davis. They found that of 113 species of freshwater fish native to the State, 7 have become extinct (most since 1960), 14 are officially listed as endangered, 7 should be immediately added to the endangered list, 19 are likely to qualify for listing soon, 25 are declining but not yet in serious trouble, and 41 appear to be secure. "In all, 57 percent of the existing taxa (species) have at least some need of special management if their populations are to continue to exist indefinitely . . . and 41 percent are either extinct or need immediate attention," the report concluded.

'Jack Williams, fisheries program manager for the Bureau of Land Management and one of the authors of the California study, says that the worrisome decline of native fish is a warning signal of a much larger problem - the general deterioration of lakes, streams and rivers, in terms of both water quality and quantity. "In many cases, California leads the trend, but that trend is well founded throughout the country, and particularly the West," Williams maintains.

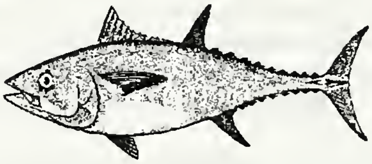
'The Endangered Species Act is inadequate to protect the many species that are now in decline, Williams says. "The Endangered Species Act is a powerful tool for preventing species from becoming extinct, but unfortunately it does little to prevent them from becoming endangered in the first place. It only comes into play after the species already requires extremely expensive and often controversial measures to save the last remnants of the population. It doesn't help to recover populations to a level where they are no longer endangered."



'Instead of fighting last-ditch battles to save each species, Williams recommends intensified efforts to preserve entire aquatic ecosystems. He would like to see a national system of protected habitats for fish, along the lines of the national wildlife refuges. The first step, he says, is to conduct a survey of rivers, lakes and streams to identify aquatic communities that are still largely intact. "We desperately need to maintain a natural biological community and protect the entire community," he says. "That's a lot easier and cheaper than trying to recover each species after it has already become endangered."

Mississippi River Plume Area Vital to Gulf of Mexico Fishery

Recent studies by scientists at the National Marine Fisheries Service (NMFS) laboratory in Panama City Beach, Florida indicate that the Mississippi River outfall, or plume area, is particularly important as a feeding and growth area for young fish, such as mackerels and tuna.



NMFS scientists believe that young fish spawned in this Mississippi plume area may enter the stock for northern Gulf of Mexico fisheries in higher percentages than young spawned in other gulf locations. Recruitment is by far the most important, yet the least understood, factor contributing to the ups and downs in the numbers of harvestable Gulf fish.

The Mississippi River drains about two-thirds of North America and annually discharges 646,000 cfs of sediment-laden, nutrient-rich fresh water into the semi-enclosed basin of the Gulf. The Mississippi is thus probably the most significant environmental factor influencing the Gulf.

Using on-site sampling and satellite imagery to track the plume's movement, NMFS scientists have discovered that

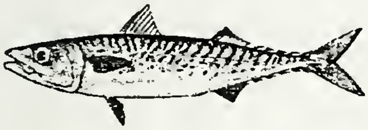
the Mississippi plume could play a significant role in determining recruitment of some northern Gulf of Mexico fishes.

Ichthyoplankton are concentrated in the several-mile-wide frontal zone where the River and Gulf waters mix. Phytoplankton and zooplankton are also abundant in this zone.

Ichthyoplankton are probably concentrated there because the large differences in salinity where river water and shelf water meet cause surface waters to move toward each other. Weak-swimming and surface-seeking animals such as fish larvae and zooplankton move with the surface waters and are concentrated where opposing waters come together.

Conditions at the front also promote higher production of phytoplankton and zooplankton, because muddy, but nutrient-rich, plume water mixes with clear, but nutrient-poor, gulf water, creating ideal growth conditions for phytoplankton and zooplankton.

At least the young Spanish mackerel, king mackerel and yellowfin tuna, which may grow more than 1 mm/day, seem to take advantage of the rich food resources in the plume area.



A school of larval fish could remain within the favorable influence of the plume for four or five days before being carried away, usually to the west, by ocean currents.

This is just another example of the complexity of the Mississippi River ecosystem, and why it is so important for us to realize that we are all connected in one way or another on this small planet, and if we are to survive as a species, we must begin to think globally!

For those of us working on Mississippi River Basin fisheries, MICRA is good place to start.

Spring Sampling Finds Herbicides Throughout Mississippi River and Tributaries

According to a report recently released by the U.S. Geological Survey (USGS) for sampling conducted on the Mississippi River and several major tributaries during April, May and June, 1991, the herbicide atrazine was detected in each of 146 water samples collected at eight locations on the Mississippi, Ohio, Missouri, Illinois, Platte, and White rivers.

More than three-fourths of these samples also contained alachlor, cyanazine, and metolachlor.

Concentrations of atrazine and alachlor, occasionally exceeded EPA's maximum contaminant levels (mcl) for drinking water. The mcl is the maximum permissible level of a contaminant in water which is delivered to any user of a public water system. MCL's are based on a lifetime of exposure to the contaminant.

Atrazine exceeded the mcl of 3 ppb in 27% of the 146 samples, including six of the eight sites.

Alachlor exceeded the mcl of 2 ppb in 4% of the samples, all of which were collected from the Illinois, Platte, and White rivers.

The data clearly showed that herbicide concentrations generally increased in early May as a result of rainfall that flushed them off the fields and into the streams after spring application to cropland.

The report's senior author, Don Goolsby, pointed out that one of the significant findings of the study is that herbicide concentrations were found to exceed mcl's continuously for several weeks in rivers as large as the Missouri and Mississippi. Conventional treatment processes generally do not remove these herbicides.

An estimated 294 million lbs. of herbicides are applied annually to control weeds in crop production in the Midwestern United States. Herbicides used in this region account for about 60% of the total herbicide use for agriculture in the nation.

Similar results were shown by studies conducted in 1989 and 1990. Herbicide concentrations as large as 100 ppb have been measured.

Copies of the report (USGS Water Resources Investigational Report 91-4163) can be obtained by calling (303) 236-7476.

A second study by the USGS has confirmed what some researchers have long suspected. Herbicides applied to land are vaporizing into the atmosphere and appearing in rainwater often far away from the point of application. The 18-month study found traces of herbicides in the rainfall of 23 states.

Amounts detected were mostly below the health advisory level for drinking water, an exception being atrazine in Iowa spring rain, which at 10 ppb was three times the EPA established level. The majority of the herbicides appear in rainfall during a one to two month period following spring planting.

This information was reported in Water, Environment, and Technology, September 1991, and in the Land Stewardship Letter, Summer 1991.

Chlordane Level Tied to Fish in Diet

A study recently completed by St. Louis University, School of Public Health scientists have documented that people eating fish from portions of the Mississippi, Missouri, and Meramec rivers show chlordane contamination in their blood. However, the levels are about 100-fold below those thought to indicate any health effect.

Those regularly eating at least a pound of fish a week form the contaminated zones had nearly five times the chlordane level as those not eating fish from such areas. State health officials have issued warnings for the taking and consumption of fish from those rivers.

American Rivers Expands Mission

American Rivers is a national organization formed several years ago with a mission "To preserve the nation's outstanding rivers and their landscapes"

Their membership has grown dramatically in recent years and with this growth has come an expanded interest and a greater commitment to protecting whole river systems instead of just "outstanding rivers". Consequently, they have expanded their mission "To preserve and restore America's river systems and to foster a river stewardship ethic."

Their new mission should make them a key public partner in many of the things MICRA hopes to accomplish. They have summarized their six-point program as follows:

1. Nationally Significant Rivers
When congress passed the National Wild and Scenic rivers Act in 1968, its intent was to create a nationwide system of hundreds of outstanding representative rivers. Realizing the vision of the creators of the system has been a long-held priority for American Rivers, and we will continue to promote this program, focussing over the next five years on obtaining protection for rivers located on federal lands. At the same time, American Rivers will analyze the need to protect a more broadly defined set of nationally significant rivers and will work to create new strategies and tools for rivers flowing through private lands.

2. Hydropower Policy Review
Contrary to popular belief, hydropower is not a totally benign source of energy. Hydropower destroys fisheries, erodes beaches, and dramatically upsets the delicate balance within natural riparian ecosystems. While American Rivers does not oppose all hydropower development, we believe the most ecologically important river systems should be spared from this damage, and that conditions on already-dammed rivers should be vastly improved. Our program of reforming hydropower siting and operations policies also will continue to be a top priority of American Rivers.

3. Protection of Endangered Aquatic and Riparian Species
Development of strong protection for endangered aquatic and riparian species and their habitat is a new five-year priority for American Rivers. This is in response to mounting scientific evidence that river-dependent species are declining faster than terrestrial components of the natural world, and because many scientists believe that these declines in America's flowing freshwater diversity indicate that our major ecosystems are seriously threatened.

4. Western Water Allocation and Instream Flow Protection
Water resources in the American West are in a critically threatened and ecologically impoverished condition. Riparian area loss throughout the arid and semi-arid regions of the nation has been rampant, with some states suffering as much as a 90% decline. Never before, however, have there been such opportunities for dramatic and important changes in western water allocation. Current plans to reform the Bureau of Reclamation, widespread efforts to institute stronger instream flow laws, and increased attention to federal reserved water rights are new priorities for American Rivers.

5. Clean Water Protection
In general, this country's approach to attaining the goal of clean waterways has been to enforce minimum, technology-based standards designed to improve the character of the water's chemistry. American rivers now intends to give a river protection "twist" to our water quality efforts by protecting rivers with pristine water quality and by building the protection and restoration of the biological integrity of river ecosystems into the water quality picture. In addition, far greater consideration must be given to the impact of flow regimes on water quality as rivers continue to be diverted for agricultural, municipal, and industrial supplies.

6. Urban Rivers
Nearly every major American city is located along or near a river. The water, habitat, and amenity value of these rivers is of as much strategic significance to the nation as our oil, coal, and natural gas reserves. For the most part, however, cities have turned their backs on urban rivers, treating them as waste removal conduits or as flood hazards. American Rivers proposes, in the next five years, to change the public's attitude toward these rivers by conducting a program to identify and recognize outstanding urban rivers.

Anyone interested in learning more about American Rivers and their programs should contact: Kevin Coyle, President, American Rivers, 801 Pennsylvania Ave., SE, Suite 400, Washington, D.C. 20003 (202) 547-6900.

REI Funds Benefit River Groups

For the fourth consecutive year Recreational Equipment, Inc. (REI), a national retailer of outdoor gear and clothing, has granted the National Rivers Coalition funds to distribute to State and local groups for river policy work.

REI set up the coalition in 1987, in cooperation with American Rivers. American Rivers chairs a coalition of 10 groups involved and plays a key role in distributing the seed grants. REI's 1991 funding of $60,000 benefitted at least 38 groups last year.

For more information on the REI seed grant program, contact National Rivers Coalition Chairperson Suzi Wilkins at (202) 547-6900.

American Rivers Challenges FERC Over 16 Proposed Dams on the Ohio River

American Rivers, a Washington based non-profit "river-saving organization", filed a formal challenge to the Federal Energy Regulatory Commission's (FERC) two year-old decision to issue hydropower licenses for 16 hydropower projects on the Ohio River.

According to the challenge, the proposed projects in West Virginia, Pennsylvania, and Ohio would cause fish mortality in the turbines and reduce dissolved oxygen levels in the upper Ohio River, threatening to undo progress made in restoring the river over the last several decades.

Water quality in the Ohio has improved, and the river now supports a major recreational fishery, including walleye, sauger, largemouth and smallmouth bass. The upper Ohio also supports 30 species of mussels; six of which are listed as endangered by the State of Ohio, and one is listed as federally endangered.

American Rivers based its court challenge on the grounds that FERC failed to defer to the recommendations of federal fisheries agencies to protect water quality and the fishery, as required under the Electric Consumers Protection Act. In addition, the suit challenges the commission's decision to license the projects prior to gathering information necessary to resolve the issue of preventing fish mortality.

Region 3 - USFWS Fisheries Challenge Grant Program Initiated

A total of $25-50,000 (or more if justified) are being made available in 1992 to State, local and private cooperators for completion of fisheries projects in Region 3 of the U.S. Fish and Wildlife Service. The States in Region 3 include Minnesota, Wisconsin, Michigan, Iowa, Missouri, Illinois, Indiana, and Ohio.

These funds will be made available on a matching basis to cooperators interested in completing projects designed to enhance fisheries resources in the Region.

Almost any type of project will be considered. The only stipulation on the match is that the funds or resources used for the match cannot in any way come from federal sources. The tentative deadline for 1992 applications is April 20th, matching funds will be awarded by May 15th.

For more information on the Program contact: Jerry Rasmussen (314) 876-1911.

CONGRESSIONAL ACTION ON RIVER BILLS PERTINENT TO THE MRDS

Hydropower

Clarification of FERC "fishway" definition to include both upstream and downstream passage (H.R. 3002 - Unsoeld): awaiting subcommittee action in House; no action in the Senate.

Federal Power Act amendments to give States primary authority to impose condition on FERC-licensed hydropower projects (H.R. 649 - Stallings, S. 106 - Craig): hearings held in House, awaiting subcommittee markup; hearings held in Senate, awaiting committee markup; in House and Senate.

National Energy Strategy changes in FERC licensing authority including repeal of land-managing agencies' ability to set mandatory conditions on hydropower projects (H.R. 1301 - Dingell, S. 1220 - Johnston, Wallop): subcommittee hearings held in the House, awaiting full committee action;reported out of full committee in Senate, measure failed on floor vote.

Reaffirmation of State authority to impose environmental conditions on FERC-licensed hydropower projects (S. 812 - Jeffords): awaiting subcommittee action in Senate; no action in House.

Wild and Scenic

Allegheny River (PA) Wild and Scenic designation (House Bill 1323 - Clinger, Kostmayer, Senate Bill 606 - Heinz): passed House, passed Senate, awaiting House-Senate conference.

Arkansas Omnibus Wild and Scenic Rivers designation (S 1743 - Bumpers): passed Senate, awaiting subcommittee action in House.

Eleven Point River (MO) additional acreage for existing Wild and Scenic corridor (H.R. 3604 - Emerson, Clay et al.): passed House, passed Senate, awaiting President's signature.

Michigan Omnibus Wild and Scenic rivers designation (H.R. 476 - Kildee, S. 209 - Riegle): passed House, reported

out of full committee in the Senate, awaiting floor action.

Niobrara and Missouri Rivers (NE) Wild and Scenic designation (H.R. 614 - Hoagland, Bereuter, S. 248 - Exon):signed by President in May to become Public Law 102-50.

Other River-Related Legislation

Clean Water Act Reauthorization (S. 1081 - Baucus): subcommittee hearings held in Senate, awaiting subcommittee markup; oversight hearings held in House.

Western Water Policy Review Board (S. 1228 - Hatfield): subcommittee hearing held in the Senate, awaiting full committee markup, no action in House.

MEETING ANNOUNCEMENTS

Upper Mississippi River Conservation Committee Annual Meeting

The Upper Mississippi River Conservation Committee (UMRCC) will hold its 48th Annual Meeting at the St. James Hotel in Red Wing, Minnesota on March 10-12, 1992. The 1992 meeting will focus on two topics: (1) The difference in current regulations among the Upper Mississippi River States (IA, IL, MN, MO, and WI) and how they can be resolved, and (2) An attempt to define our vision for the River in coming decades. The UMRCC is an organization of the five State conservation departments. Further information regarding the meeting can be obtained from Mark Heywood, Minnesota Department of Natural Resources (507) 285-6503.

Mississippi River Symposium to be held at the Annual Meeting of the American Fisheries Society

Larry Hesse, Nebraska Game, Fish & Parks has organized a major symposium (possibly two full days in length) on the rivers of the Mississippi River Basin to be held in conjunction with the Annual Meeting of the American Fisheries Society in Rapids City, South Dakota on September 13-17, 1992. Larry has organized the symposium to help stimulate the communication process between fisheries researchers and managers, basinwide.

The objectives of the symposium are:
(1) To organize a description of existing information on the geology, hydrology, morphology, native fish species, introduced fish species, standard methods used to survey fisheries, human impacts on the physical system, and the values associated with the riverine resource, (2) To define existing or planned management that might be useful for fisheries management in other rivers within the basin, and (3) To identify minimal requirements for the restoration of important fish stocks and other aquatic resources.

Papers presented at the symposium will view each river discussed from an ecosystem perspective, and discuss their relative contribution as a tributary to the larger Mississippi River ecosystem. Whenever possible emphasis will be placed on the impact of an altered hydrological cycle, sediment and organic matter dynamics, and relative loss of side-arm connectivity as factors in the changing environment for aquatic life in the River.

So far, papers will include discussion of the following rivers: Arkansas, Big Muddy, Illinois, Upper Mississippi, Wabash, Allegheny, Kansas, Platte, James, White (SD), Powder, Pigeon, Yazoo, Sabine, Kaskaskia, Wisconsin, Kanawha, Minnesota, White (AR), Kankakee, Yellowstone, Ohio, Embarrass, Iowa, Cedar, Little Wabash, St. Croix, Vermillion, and Missouri.

Mississippi River Research Consortium

The Mississippi River Research Consortium will hold its 24th Annual Meeting at the Holiday Inn in LaCrosse, Wisconsin on April 30 - May 1, 1992. The research consortium is an organization of Academic, State, Federal, and private researchers on the Mississippi River. The group meets annually in LaCrosse and invites participation from researchers over the entire Mississippi River.

UMRCC Mussel Symposium

A symposium entitled, "The Conservation and Management of Freshwater Mussels" is planned for October 12-14, 1992 at the Embassy Suites Hotel in St. Louis, Missouri. The symposium is being sponsored by the Upper Mississippi River Conservation Committee.

The symposium will focus on:

(1) Regulations - State, regional or system updates, management strategies for commercial and non-commercial spp., future trends and needs, sanctuaries, limitations on industry

(2) Commercial Harvest - Upper Mississippi River status, regional assessments of pressure, industry status, concerns and trends, international trade implications

(3) Conservation - culture, early life history, reintroduction, stocking, restoration, habitat requirements and management, habitat alteration, indices of populations, exotics update, endangered species recovery efforts, etc.

(4) Sampling Methodology and Data Management - equipment and collection strategies, evaluation techniques, sampling designs, software applications

(5) Environmental Awareness - legislative needs, political processes, export taxes, resource rent, user fees

More information on the Symposium can be obtained from Kurt Welke, Wisconsin Department of Natural Resources (608) 326-0233 or Jon Duyvejonck, UMRCC Coordinator (309) 793-5800.

MICRA

Mississippi Interstate Cooperative Resource Agreement

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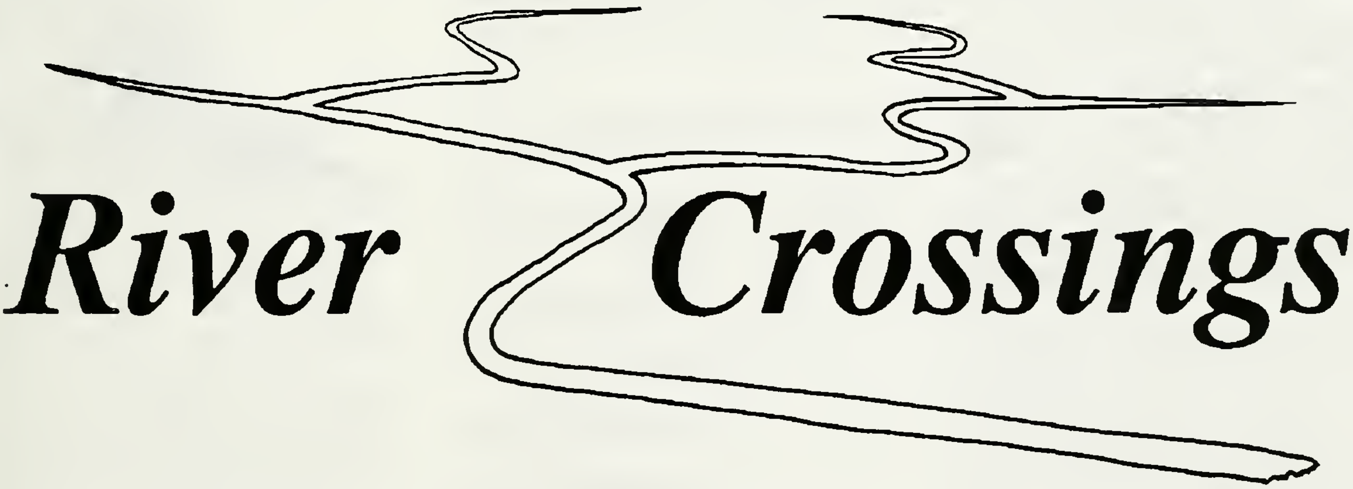

River Crossings

River Crossings

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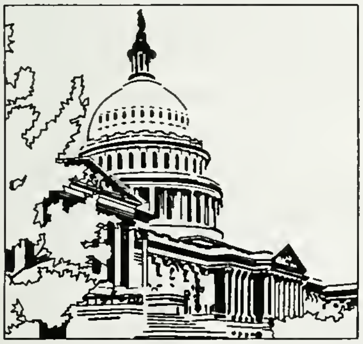
Volume 1 March/April 1992 Number 2

Interjurisdictional Rivers Bill Introduced

On February 5, 1992, Congressman Steve Gunderson (D/WI) introduced **H.R. 4169**, cited as the "**Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1992.**" Congressman Wayne Owens (D/UT) joined Gunderson as an initial co-sponsor.



Since its introduction Joe Kolter (D/PA), William J. Jefferson (D/LA), Chester G. Atkins (D/MA), William H. Natcher (D/KY), Jerry F. Costello (D/IL), Jerry Huckaby (D/LA), Arthur Ravenel, Jr. (R/SC), and W.J. (Billy) Tauzin (D/LA) have also signed on as co-sponsors. However, numerous additional co-sponsors are needed.

The Bill has been referred to the House Merchant Marine and Fisheries Committee and from there to the SubCommittee on Fisheries and Wildlife Conservation and the Environment

Supporters of the Bill should contact their representatives, senators, members of the House Merchant Marine and Fisheries Committee and members of the House SubCommittee on Fisheries and Wildlife Conservation and the Environment requesting that they join Congressmen Gunderson and Owens in supporting this legislation. Potential co-sponsors can be directed to contact Brad Cameron, Washington, D.C. (202) 225-5506.

The following organizations have thus far endorsed **H.R. 4169**:

- International Association of Fish and Wildlife Agencies
- American Fisheries Society
- Izaak Walton League of America
- Sport Fishing Institute
- Trout Unlimited
- American Fishing Tackle Manufacturer's Association
- American Rivers Association
- Upper Mississippi River Conservation Committee
- Missouri River Natural Resources Committee

The **Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1992** (**H.R. 4169**) will establish a National Council which will identify 10 of America's interjurisdictional rivers with the greatest need of cooperative fisheries management. Of these 10, the Council will develop comprehensive fishery plans for the 5 highest priority interjurisdictional rivers. The Council will be composed of 13 members, 7 being State fish and wildlife agency directors representing the major drainage systems, and 6 being Federal agency representatives. The Secretary of the Interior (or his designee) will serve as Chairman.

H.R. 4169 also will provide for a pilot test of the Mississippi Interstate Cooperative Resource Agreement (MICRA) entered into by the 28 states of the Mississippi River Basin and the U.S. Fish and Wildlife Service in August 1991. The Tennessee Valley Authority and two Indian nations have since joined in the Agreement.

MICRA proposes to coordinate management of the Basin's interjurisdictional fisheries on an ecosystem basis. State fisheries managers in the Mississippi River Basin have already identified more than 90 major rivers and 80 riverine species which fall under interjurisdictional management. MICRA does not duplicate any existing organizational network.

This legislation is the result of extensive consultation between Congressman Gunderson, several national conservation organizations and MICRA proponents. River advocates are encouraged to contact their congressmen urging support of this important bill. Anyone needing additional information about H.R. 4169 and how to support it can contact the MICRA office.

Highlights of President Bush's FY 93 Budget

The President's FY 93 budget contained the following items of interest to the Basin's rivers:

Conservation Reserve (CRP) - The CRP would receive $1.799 billion, a $59 million increase from FY 92.

Wetlands Reserve Program (WRP) - Created by the 1990 farm bill, the WRP got its first funding last year. In 1993 it would receive $160.9 million, a $114.5 million increase from FY 92.

Water Bank - This 20-year old program, also aimed at preserving wetlands, would receive $11.4 million, a $7 million cut from FY 92.

Endangered Species - FY 93 funding would be $41.7 million, up $6 million from FY 92. Proposed are status surveys of candidate species and conservation activities to prevent the need for listing species at a later date.

Upper Mississippi River - The Environmental Management Program would get $18.6 million.

Tennessee-Tombigbee Waterway - Ten million would be spent on wildlife mitigation in Alabama and Mississippi.

Missouri River - Environmental work on the Missouri would receive $5.6 million.

Source: Land Letter (The Newsletter for Natural Resource Professionals) vol 11, No. 5.

The McKnight Foundation Announces Five-Year $9 Million Mississippi River Program

On March 16, 1992 the McKnight Foundation, headquartered in Minneapolis, announced a five-year $9 million commitment to protect and restore the Mississippi River. The new program will award grants to stimulate local activities that protect specific areas along the river and to build local and national networks linking those with a stake in the river in collaborative efforts to protect it. The Foundation hopes its program will focus increased public attention on the Mississippi River and attract the resources of other individuals and organizations to restoring its health.

The McKnight Foundation's commitment to address environmental issues along the Mississippi River is tied to its primary mission, which is to expand opportunities for people who are poor or disadvantaged. Mike O'Keefe, executive vice president, explains "...Residents of endangered riverside areas frequently lack the resources to identify and stop threats to their portions of the river, whether the pollution originates in their own community or has it source many miles upstream..."

Dozens of agencies and groups relate to small stretches of the river, yet no single organization or network deals with the entire river. The Foundation will therefore also encourage

River Crossings

Published by

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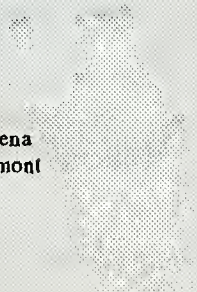


River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

collaboration among people and organizations concerned with or affected by the health of the Mississippi. "The Foundation believes much can be accomplished if people work across state and other boundaries for the good of the entire river," Mr. O'Keefe continued.

The McKnight Mississippi River program has three components:

- Mississippi River Network Grants will create and strengthen networks of organizations active in protecting the river, particularly citizens' groups.

- Demonstration Projects, for which priorities will be announced later in 1992, will be intensive efforts developed and overseen by the Foundation to address specific environmental issues in selected 50- to 150-mile reaches of the river.

- General Grants, of up to $50,000, will support a range of innovative projects that protect and restore the health of the Mississippi and river communities in the ten states bordering the Mississippi.

In general the Foundation will consider requests to support projects focussing on:

- The Mississippi River and its banks;

- The floodplain of the Mississippi, including its delta; and/or

- Areas which use Mississippi River water to supply cities, factories, or agriculture.

Organizations located outside these areas must demonstrate that their project will directly affect the health of the Mississippi River.

The Foundation's priorities include environmental protection and restoration, problem solving, sharing resources with other funding groups, strengthening networks and collaborative efforts, and helping the poor and disadvantaged.

The Foundation **will not** consider **General Grant** requests for:

- Applied and basic research, scholarships, or publications;

- Environmental education efforts in primary and secondary schools, universities, or for the general public. Projects which include education of special audiences like farmers, owners of small businesses, teachers, or local government officials will be considered;

- Festivals, celebrations and similar activities;

- Conference expenses, except as arranged by the Foundation;

- Travel expenses, except as related to McKnight support of an organization;

- General operating support; and

- Land acquisition, endowments, or purchase of buildings or major equipment.

In addition to the Mississippi River component, the Foundation's environment program will address energy conservation and alternative energy sources in Minnesota. Details of that effort are still being developed and will be announced later.

Founded in 1953 and endowed by William L. and Maude L. McKnight, the Foundation has assets of approximately $1 Billion and paid grants totalling $46.6 million in 1991. Mr. McKnight was one of the founders of the 3M Company, although the Foundation is independent of that corporation.

Guidelines for the program of general grants are available from The McKnight Foundation, Suite 600, TCF Tower, 121 South Eighth Street, Minneapolis, MN 55402, telephone (612) 333-4220. Further information on the other two components of the program will be made available later this year. Daniel K. Ray is program officer for the environment.

The MICRA coordinator has been invited to participate in a McKnight sponsored "Upper Mississippi River Issues Workshop" to be held in Dubuque, IA on April 1-2.

Sturgeon/Paddlefish Workshop

The U.S. Fish & Wildlife Service sponsored a *Acipenser/Polyodon* Workshop in Atlanta on January 28-30. The purpose of the workshop was to discuss national paddlefish and sturgeon restoration objectives and activities and improve the efficiency and effectiveness of paddlefish and sturgeon culture techniques.

Most of the workshop was dedicated to information exchange between personnel from various federal and state fish hatcheries, research facilities, technology centers, and enhancement offices. Attendees addressed fisheries management objectives, activities, the latest state-of-the-art developments, current initiatives, problems, successes, and where we go from here.

Based on the various presentations, there is an obvious need for improved communications, both within and between agency and state researchers and resource managers working on these species.

The final day of the workshop was dedicated to a facilitated session entitled, *Sturgeon and Paddlefish Restoration -- What are our problems? What are our needs?* The objectives of the workshop were to (1) Identify and rank issues, (2) Discuss coordination funding strategies, and (3) Identify a core group to produce a guidance document.

The following were among the high ranking issues:

- Enhance coordination on development of hatchery drugs and chemicals.
- Establish state and agency roles and responsibilities for management and maintenance.
- Identify critical spawning and nursery habitats.
- Develop culture and rearing techniques for pallid sturgeon.
- Develop goals and objectives for pallid sturgeon restoration.
- Develop a GIS to better map and define critical areas.
- Improve coordination and information transfer.
- Gain public support for protecting paddlefish and sturgeon.
- Develop non-lethal spawning methods.
- Improve hatchery feeding and nutrition methods.
- Identify and characterize habitats of the Atlantic and shovelnose sturgeon.
- Establish a forum under which states and agencies can coordinate and operate.

The latter issue is of special interest to MICRA, because our group was mentioned repeatedly as the heir apparent to the role of coordinating efforts to protect and restore paddlefish and mid-continent sturgeon (shovelnose, pallid and lake) populations.

The MICRA Coordinator was asked to participate on a committee assigned to follow-up on the workshop and prepare a summary and recommendations. That Committee will meet in April 21-22 at the Waddell Mariculture Center in Bluffton, South Carolina.

States and agencies can expect to see a document coming out of that meeting sometime late this spring or summer.

Sturgeon Genetics Study

The Omaha Division of the U.S. Army Corps of Engineers is conducting a contract study to evaluate the genetic variation of *Scaphirhynchus spp.* in the Mississippi River Basin. This study is being coordinated with the efforts of the pallid sturgeon recovery team.

The goals of the study are to:

- Determine the degree of genetic divergence between pallid and shovelnose sturgeon.

- Identify genetically meaningful management units (stocks) of pallid and shovelnose sturgeon.
- Determine the extent of hybridization which is occurring.

The Corps is asking the assistance of the States, agencies and anyone else who has information on sturgeon to assist in identifying spawning runs and any preserved pallid sturgeon specimens. This information is necessary to identify locations where specimens can be sampled.

The contract requires collection of specimens from populations throughout the Basin. Populations targeted to date include:

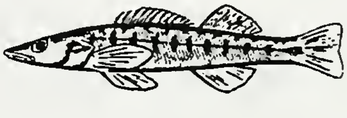
- Missouri River
  - Above Fort Peck Dam
  - Below Fort Peck Dam
  - Below Oahe Dam
  - Below Platte River mouth
  - Below Kansas River mouth
- Mississippi River
  - Near Bellevue, IA
  - Near Cape Girardeau, MO
- Atchafalaya River
  - At Old River Control Structure
- Ohio River
- White River, Arkansas
- Yellowstone River
  - Below Intake, MT
  - At Tongue River mouth
- Alabama River

It is anticipated that 10-15 shovelnose sturgeon would be necessary from each identified population. Contract sponsors realize it will probably not be possible to come across any live pallids, however, if such an opportunity presents itself it would be important to obtain a tissue and/or blood sample.

Anyone who can provide information on sturgeon populations or can assist in collecting specimens should contact Mr. Mark Harberg, Environmental Resources Branch, Missouri River Division, U.S. Army Corps of Engineers, P.O. Box 103, Downtown Station, Omaha, NE 68101-0103, or call (402) 221-7270.

Longnose Darters Translocated

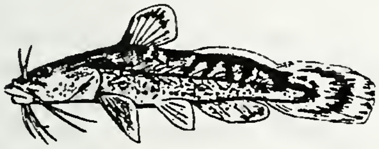
Lee Creek, located in far eastern Oklahoma will soon be impounded by a water supply reservoir for Fort Smith, Arkansas. Lee Creek is one of a few remaining free-flowing streams in Oklahoma which contain longnose darters.



Sixty-four darters were collected and stocked into Black Fork Creek, a stream within the historical range of the longnose darters and located about 60 miles south of Lee Creek. Eleven darters were also sent to the San Marcos National Fish Hatchery and Technology Center in Texas to begin a captive breeding program. Success of these relocation efforts will be monitored by future sampling.

Bad News for the Neosho Madtom

Recent surveys of the Spring River (MO, KS, and OK) for the Neosho Madtom, *Noturus placidus* indicate that this recently listed (threatened) fish may now be extirpated from this river.



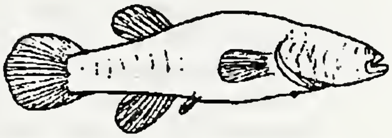
Although there has not been a systematic survey done on the Spring River in Missouri, Dr. Paul McKenzie (USFWS, Columbia Endangered Species Biologist) informs us that Dr. Bill Pflieger of the Missouri Department of Conservation looked for the species at two localities in the Spring River where the madtom was previously observed (summer 1991), and could not relocate it.

Service biologists in Fish & Wildlife Service Regions 2, 3, and 6 hope to initiate a water quality study on the Spring River to help determine why the species has apparently been extirpated. Biologists within MO, KS, and OK agree that there is a desperate need for cross-regional cooperation and coordination to further study and recover this species.

If apparent trends continue in the Neosho and Cottonwood Rivers in Kansas and Oklahoma, it may be necessary to downgrade the species from threatened to endangered.

Ozark Cavefish Refuge

The first unit of the Ozark Cavefish National Wildlife Refuge was acquired by the U.S. Fish & Wildlife Service in 1991. The area, located in Missouri, will be managed cooperatively by the Service and the State of Missouri.



An Ozark Cavefish Conference was held in Springfield, MO in mid November, 1991. The workshop's purpose was to promote information exchange and open discussion about ways to speed recovery of this federally threatened species. Over 100 people attended.

Protecting water quality is clearly the key to protecting and recovering cavefish populations. Despite the complexity of water movements in the cavefish's underground habitats, dye-tracing will likely be used to help delineate the recharge areas, thus identifying target areas for land protection efforts.

Along those lines, the U.S. Fish and Wildlife Service has awarded a $22,500 Director's Challenge Grant to the Service's Columbia, MO Field Office to implement the first year of a public outreach/private lands program for the Ozark cavefish. The award will be matched by the Missouri Department of Conservation, as a cooperating agency project.

The project will concentrate on landowner contacts within the watersheds of 12 cavefish caves in Missouri. Besides informing landowners of the existence of the species and its dependence on high quality ground and surface water within the watershed, the Fish & Wildlife Service and Department of Conservation hope to negotiate management agreements to avoid and correct water quality problems.

Costs Related To the Listing and Recovery of Endangered Species

Kent Keenlyne, Coordinator for the Missouri River Natural Resources Committee (MRNRC), was recently asked to provide cost estimates related to the listing and recovery of endangered species. At present, there are some 50 species (8 fish) on or along the Missouri River that are listed or under federal review categories.

Keenlyne's figures estimate status review costs ranging between $50-200K, depending the range of the species. Preparation of prelisting packages and final rules cost about $15K each, and the recovery plan another $20K. Total Fish & Wildlife Service costs, therefore, range from nearly $100-250K per species.

The draft pallid sturgeon recovery plan (excluding physical modification costs of structures) estimates a need for $20 million over a 10-year period.

Dick Taylor, Missouri River Division, Corps of Engineers, provided Keenlyne with estimated 1991 Corps expenditures of $724K for 14 species ($51.7K per species). He also estimated power revenue losses to avoid flooding tern and plovers nests as follows: $437K at Oahe Dam, $119K at Garrison Dam, $73K at Fort Randall Dam, and $71K at Gavins Point Dam.

Keenlyne estimated that, in ball park terms, federal agencies (other than the Fish & Wildlife Service) spend about $1 million annually on listed species on the Missouri River. Other interests (almost exclusively hydropower) forego about $250K annually in lost power production.

In summarizing, Keenlyne estimates that to complete the listing of the remaining 37 species, the Fish &

Wildlife Service would have to budget from \$3.7-9.25 million over the next few years. If recovery cost per species is \$10 million each, total recovery would exceed \$500 million, plus any modification necessary to the system (i.e. bypasses, multiple release outlets, etc.).

Keenlyne concludes that the \$0.5 billion for recovery could be better spent doing restoration work to avoid listing --- Amen!

The House Merchant Marine and Fisheries Committee plans hearings on the Endangered Species Act in late spring. Rep. Gerry Studds (D/MA) introduced a reauthorization bill (H.R, 4045) in November. Sen. Max Baucus (D/MT) is expected to offer similar Senate reauthorization legislation with hearings to follow.

In the meantime, the National Academy of Sciences has agreed to do a major study of the biological aspects of the Act as requested by House Speaker Foley (D/WA), Sen Hatfield (R/OR), and Studds.

Zebra Mussel Update

Since our first issue of "*River Crossings*", we have learned of numerous additional zebra mussel collections in the Basin. Four collections were made from the Chicago Sanitary and Ship Canal which links Lake Michigan with the Illinois River. Seventeen additional collections have been made from the Illinois River, 5 from the Upper Mississippi, 3 from the Ohio River, 1 from Kentucky Lake, and 1 from the Cumberland River. We understand from the American Fisheries Society that in December the zebra mussel was also collected from the upper Susquehanna River in New York, a tributary to Chesapeake Bay.

Most of these collections have been made by state agency biologists during normal sampling procedures. However, 5 Illinois River and the Kentucky Lake collections were reported by commercial mussel fishermen as attached to shells of the native threeridge mussel.

Don Schloesser [USFWS-Ann Arbor, (313) 994-3331], one of the top zebra mussel researchers in the country, presented a discussion of zebra mussel biology at a recent meeting of the Upper Mississippi River Conservation Committee. According to Dr. Schloesser, the major concerns with the spread of the mussel are with the clogging of water intakes (industrial, domestic, and marine), and the colonization on and consequent suffocation of native mussels. Some concern exists over the mussel's ability to disrupt food chains by their ability to filter the nutrients out of huge volumes of water.

Biologically, the concern for the welfare of native mussels seems to be of most immediate concern. According to Steve Ahlstedt (Tennessee Valley Authority, Muscle Shoals, AL) approximately 200 species of freshwater mussels have been described from the Basin.

Of these 125-135 species are extant, but some exist only as relict, non-reproducing populations. Presently, 32 of the 38 mussel species listed on the Federal Register as endangered or threatened are part of the Mississippi River fauna. Many of the listed mussel species, and probably their fish host(s), necessary in their reproductive life-cycle, were present only in free-flowing rivers and streams and have been unable to adapt to impoundment conditions. Thirteen species of the genus *Epioblasma*, originally reported from riffle and shoal habitats throughout the Basin, are now considered extinct.

If some experts are right, the zebra mussel could spell doom to numerous other species, as well as the \$60+ million export business in this country that supports the Japanese cultured pearl industry.

No obvious fish impacts have been observed in the Great Lakes where the mussel has been established for several years. Initial concerns about impacts on walleye spawning success have not yet been documented, since the lakes have experienced excellent walleye recruitment the past two years. Catfish have been documented as feeding on the mussel, and drum, especially larger drum, are feeding heavily on zebra mussels. Commercial fishing nets have been colonized, but effects on fishing success have not been documented.

Schloesser indicated that diving ducks feed heavily on zebra mussels in parts of Europe, and have provided some measure of control, but no biological control is indicated yet in the United States. Chlorine injection appears to be the technology of choice for industry at the current time.

However, according to "Mussel Morsels", a publication of the Lake Ontario Zebra Mussel Coordination Office, other strategies are being evaluated. UV treatment has inhibited primary settlement, but some secondary colonization by translocators is occurring. Coating pipes with antifouling coatings such as silicon and zinc are showing success. Other control methods being tested include electrochemical, acoustics and pressurized flow. For more information on these potential control methods contact the Zebra Mussel Coordination Office (416) 832-7255.

Other Exotic Invertebrates in the Basin

In addition to the zebra mussel, two additional exotic invertebrates have been collected in the Basin's rivers, since 1988.

Mytilopsis leucophaeata, commonly called the dark falsemussel, is a euryhaline relative of the zebra mussel. It has been collected from the Mississippi, Ohio and Tennessee rivers and seems to have adapted to survival in freshwater. Initiation of spawning may require a saline pulse, so the organism has not become a nuisance. But scientists feel the organism may soon be able to develop reproductive capability in freshwater systems, and deserves watching.

Dozens of individuals of a euryhaline amphipod, *Corophium* sp. cf. *lacustre*, were collected at Tennessee River Mile 135 during the summers of 1988-1990. The tube-building amphipod, widely dispersed along the U.S. Gulf Coast, is recognized by its characteristic large, flattened antennae and dorsoventrally compressed body. Specimens have also been collected recently along the lower Mississippi and Arkansas rivers, and from a barge fleeting area in Kentucky Reservoir. Life history and ecological requirements of the amphipod in fresh water are unknown.

The exact origin of these exotic invertebrates is also not known. However, translocation by barge or other vessel from the Gulf Coastal area via the Tennessee-Tombigbee or from the Mississippi-Ohio waterways is a likely means of dispersal. Future detection of the species will help ascertain life history limitations on permanent establishment of both organisms in the Basin.

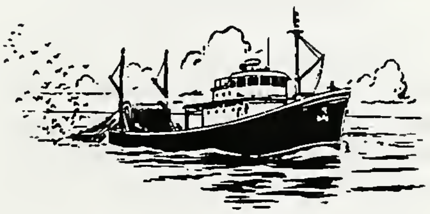
For further information contact: Dr. R. Don Estes, Tennessee Cooperative Fishery Research Unit, Tennessee Technological University, P.O. Box 5114, Cookeville, TN 38505, or call (615) 372-3094.

Invasion of the Ruffe

The ruffe, *Gymnocephalus cernuus*, like the zebra mussel, apparently invaded the Great Lakes through the dumping of ballast water from cargo ships of European origin, sometime during the last two decades.

The ruffe has become established in Lake Superior despite efforts to control it, and is apparently (with some success) invading the lake's Minnesota and Wisconsin tributaries (i.e. St. Louis, Amnicon, Brule, and Iron rivers).

These are relatively small rivers that drain north to Lake Superior. However, they lie very close to the headwaters of the St. Croix, which in theory, could provide access for the ruffe to the entire Mississippi River drainage.

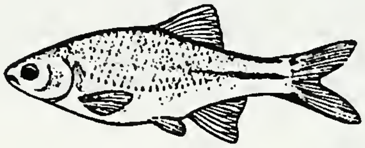


How successful the ruffe may be in invading the Mississippi River System is open to question.

Red Danger for Desert Fish

Nature Conservancy ran the subject article in their January/February 1992 issue referring to the red shiner, native of the Mississippi River Basin.

Apparently, the red shiner has successfully invaded numerous streams in the southwestern states, presumably through release from fishermen's bait buckets. It is suspected of preying on young native fish and outhustling rivals for food and cover.



The red shiner's achilles heal may be its inability to withstand flash flooding. Biologists hope so, and the Bureau of Reclamation is cooperating by building fish barriers designed to create 3-6 foot waterfalls, which would spill the slow-swimming red shiner downstream during floods and then block their return upstream after floods.

Apparently, such a dam built last year and flooded once so far shows some promise.

Hydro Controversy on the Upper Mississippi

Paddlefish movement between dams on the Upper Mississippi has become a major issue at a proposed hydroelectric facility near LeClaire, Iowa.

The foremost environmental issue concerns a specially designed "trashrack", or fishway needed to direct downstream fish movements away from

the plant's turbines. Estimated cost of the fishway is $7-21 million.

Plant proponents argue that the recently changed law provides only for anadromous species (salmon). But Jody Millar, biologist for the U.S., Fish & Wildlife Service in Rock Island, says lake sturgeon, skipjack herring, American eel, and paddlefish all meet the criteria of the law.

Millar said walleye, channel catfish, and white bass may also need to move through dams for spawning, over-wintering and feeding. Plant officials strongly disagree with the Service position.

The ultimate decision on the fish migration issue may rest upon paddlefish. Only a few sites have been identified in the Upper Mississippi where paddlefish spawn, and the species needs to migrate though the dams to survive.

Ed Crouse, Chief of FERC's environmental review section says, the LeClaire project is the first major plant where this policy will be tried. As such, the outcome regarding the migration issue could have far-reaching consequences for future hydro-electric facilities across the nation.

Both Iowa and Illinois natural resources and conservation departments have opposed the plant without appropriate environmental safeguards. The Iowa Wildlife Federation and the Izaak Walton League also have passed resolutions opposing construction without environmental studies and fish safeguards.

According to an article in the Quad City Times (Jan. 12, 1992), environmentalists also have vowed a lawsuit if the plant is licensed without the safeguards recommended by the Fish & Wildlife Service.

Plant officials said the earliest date FERC could consider licensing the plant is in May.

USDA Announces Pilot Wetlands Reserve Program

On February 6th the Secretary of Agriculture Edward Madigan announced a pilot Wetlands Reserve Program (WRP) in eight states (CA, IA, LA, MN, MS, MO, NY, and NC). Producers in those states may enroll up to a total 50,000 acres in WRP during fiscal year 1992.

The WRP, funded at $46.4 million this year, was one of the landmark environmental steps in the 1990 Farm Bill. The Administration is asking to increase funding to $160.9 million for fiscal 1993, beginning October 1.

Under the WRP the U.S. Department of Agriculture's Agricultural Stabilization and Conservation Service can spend funds to purchase easements from eligible owners who agree to restore farmed and converted wetlands with some adjacent lands dependent upon wetlands.

The WRP's goal is to enroll one million acres by the end of 1995 through the purchase of permanent or long-term easements. Eligible landowners may offer their land to be enrolled in the WRP during a designated signup period this spring which will be announced later.

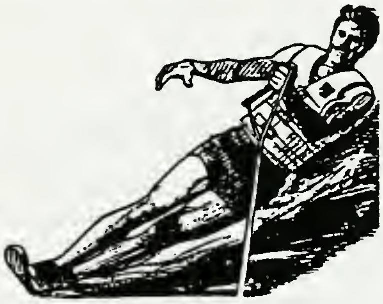
If the land offered is eligible, and the compensation requested is acceptable, cost-share assistance may be provided for rehabilitating the land under easement. Certain compatible uses of the land under easement will be permitted in exchange for continued maintenance of the land by the landowner and successors.

GAO Study Stirs Controversy on the Missouri River

A GAO report requested by Senator Kent Conrad (D/ND), and Congressman Byron Dorgan (D/ND), when the Corps of Engineers refused to change reservoir water release policy for upstream states, has come out in favor of recreation over navigation.

The two-year GAO study said that in 1944 the Corps estimated there would be 12 million tons of goods transported annually on the river. At commercial navigation's peak in 1977, only 3.3 million tons were shipped, in 1988, 2.2 million tons, and in 1990 only 1.4 million tons were shipped. The report also said the federal government never constructed irrigation projects, anticipated in 1944, that would have used the reservoirs' water to irrigate 2.2 million acres.

The GAO report states that Upper basin surveys reveal that the reservoirs supported visitor spending of about $65 million in 1988, compared with gross revenues for barge companies of about $17 million. The report also disputed the Corps' claim that it cannot change priorities for managing dams along the river without an act of Congress.



In a lawsuit filed in the U.S. District Court for Montana (South Dakota v. Needham), the upstream states argue that the Flood Control Act of 1944 does not set up primary and secondary uses for projects. GAO agrees, "Our review did not reveal a statutory scheme for regarding project purposes authorized under various laws as primary or secondary....Thus, we see no appropriate basis for the Corps' view that it is statutorily precluded from considering the economic and other benefits of any authorized purpose in determining reservoir operating priorities."

However, under pressure from politicians in the lower states (IA, MO, KS, and NE), the GAO has agreed to take a rare second look at its findings. Less than 1 in 300 GAO reports get such attention.

Critics of the report contend that the analysis ignores several factors, including the value of inexpensive shipping of chemicals to farmers and of their grain to markets.

The lawsuit is due to come before the court this summer.

Biologists Onboard!

"Biologists Onboard" is an Upper Mississippi River program that was an indirect result of construction of a second lock at Lock and Dam 26 at Alton, IL. The voluntary effort was organized by the U.S. Fish & Wildlife Service, U.S. Environmental Protection Agency, and the American Waterways Operators.

In 1985, biologists thought of the idea when they gathered to discuss the environmental impacts of increased towboat traffic on the Upper Mississippi, and to generate ideas on what could be done by the federal government and the towing industry to reduce the damage.

State and federal biologists began riding with towboat operators on the Upper Mississippi in the summer of 1989. A videotape explaining the program has been distributed to towboat pilots.

The trips have three goals:

- Help pilots learn more about the river's natural resources and help biologists learn more about towboat work.

- Discuss ways a tow might better protect the environment and to evaluate those ideas.

- Obtain feedback on actions the towboat industry, U.S. Army Corps of Engineers and other agencies could take to safeguard the river's flora and fauna.

Biologists hope to develop a booklet or guide to environmentally sensitive areas such as fish spawning grounds and mussel beds that will help towboat pilots avoid damaging river life as they carry their cargo.

For more information on the "Biologists Onboard" Program contact: Jon Duyvejonck, Upper Mississippi River Conservation Committee, 4469 48th Ave., Court, Rock Island, IL 61201, (309) 793-5800.

Reauthorization of the White River Reservoir System

The White River dams (AR and MO) were originally authorized for flood control, power generation, and water supply. These include Beaver, Table Rock, Bull Shoals, Clearwater, Norfork, and Greers Ferry. Recreation values on most of the system now exceed flood control and power benefits.

According to the states, reservoir operation continues to impact fish, wildlife, and recreation values (including the mitigation coldwater fisheries). Operational changes necessary to alleviate these impacts are resisted by the Corps because fish and wildlife is not an authorized project purpose.

The States of MO and AR are initiating a cooperative effort with the Fish and Wildlife Service to gain reauthorization of the Project to include fish, wildlife and recreation as authorized project purposes.

This would give the Corps authority to regulate water levels to be compatible with recreational uses and values.

Mitigation Measures for Reservoir Sediment Buildup

The problem of sediment buildup behind dams, bed degradation below dams, and reservoir withdrawal of suspended solids is a universal problem basin-wide. Reservoir withdrawal of suspended solids from the water column especially plagues the free-flowing lower Missouri and lower Mississippi rivers, as well as the Gulf of Mexico.

Measures that could be taken to improve this situation would be welcomed by biologists and project managers alike. The December 1991 issue of *Hydro Review* carried an article entitled "Remedies for Sediment Buildup" by Dr. Krishan P. Singh and Dr. Ali Durgunoglu. The article summarized several methods of mitigating this problem. They include drawdown and flushing, density current flushing, venting sediments through undersluices, reservoir operation policy and design, siphoning, and dredging of sediments.

According to Drs. Singh and Durgunoglu:

- Reservoir drawdown and flushing can achieve a high sediment removal efficiency, but are only feasible if reservoir capacity is considerably less than mean annual inflow.

- Venting density currents through sluices is most effective (reducing entrapment by about 40%) for large sediment-laden inflows entering short reservoirs.

- Venting sediments through undersluices can vent up to 80% of the sediment entering a reservoir during

high flow periods. However, this is not an effective technique for reservoirs with a high ratio of reservoir capacity to inflow.

- Reservoir operation and design features (built-in or retrofitted) that maximize venting of sediments is very economical, but it may be difficult to change operation policy at existing reservoirs.

- Siphoning structures are quite economical to add to existing dams and reservoirs, but are most effective for only short distances from the dam.

- Dredging sediments is advantageous, but is quite costly, effects water quality, and creates the need for a disposal area.

Drs. Singh and Durgunoglu also reported that University of Arizona engineers had recently proposed the use of a controlled pipeline release system. They provided a schematic (Figure 1) of a reservoir including such a flushing pipe, as well as a check dam, and sluices.

They concluded that:

- The costs of incorporating sediment entrapment reduction measures in dam design can be justified by decreases in capital and present worth costs due to a smaller initial storage capacity and an absence of future dredging costs.

- Reservoirs with sediment entrapment reduction measures can be used beyond their design life. This factor is important in terms of preserving the interests of future generations.

- Reducing the amount of trapped sediment naturally permits more sediment to be flushed out with the flow. This situation can alleviate downstream bed degradation and the cave-in of banks.

- Reduced sedimentation in the reservoir improves reservoir water quality because less pollutants (absorbed on the surface of sediment particles) are retained.

- Sediment reduction can be economically achieved in the design of new dams and reservoirs as well as in retrofitting existing ones.

- When sediments are vented from the reservoir, water close to the reservoir bed, which is low in dissolved oxygen, is also vented. As a result, this water is replaced with water in the upper parts of the reservoir that has higher dissolved oxygen content. This water replacement greatly increases the volume for fish and recreation in the reservoir, and causes less recycling of nutrients.

Drs. Singh and Durgunoglu may be contacted at Illinois State Water Survey, Office of Surface Water Resources and Systems Analysis, 2204 Griffith Drive, Champaign, IL 61820-7495, (217) 333-0237.

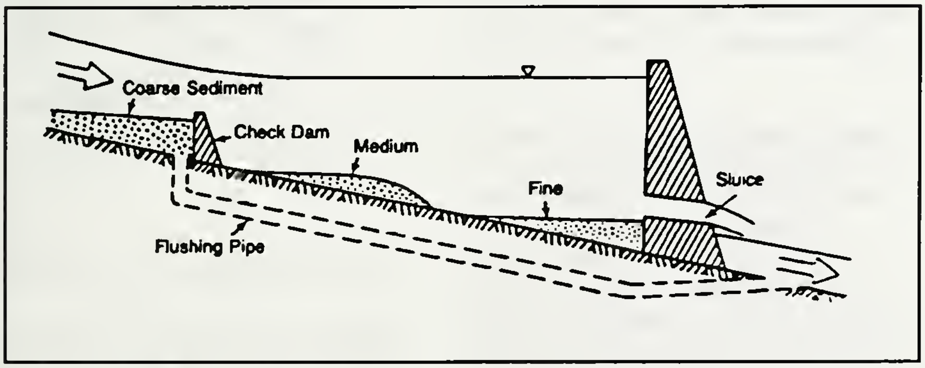


Figure 1. A schematic of a check dam, flushing pipe, and sluices used in a sediment entrapment reduction program for a reservoir.

The Project

"In the beginning was *The Project*. Then arose the Assumptions. And *The Project* was without form and the Assumptions were not valid. And the darkness was upon the faces of the Implementers.

'And they spoke unto their manager, saying, "It is a crock of !@?, and it stinketh."

'And the manager went to the 2nd level manager and he spoke unto him, saying, "It is a crock of excrement and no one may abide the odor thereof."

'And the 2nd level manager went to the 3rd level manager and he spoke unto him, saying, "It is a container of excrement and it is so strong that no one may abide before it."

'And the 3rd level manager went to the Headquarters Director and he spoke unto him saying, "It is a vessel of fertilizer and none may abide it's strength."

'And the Director went to the Divisional Vice President and he spoke unto him, saying, "It contains that which aids plant growth and it is very strong."

'And the Vice President went to the

Division President and he spoke unto him, saying, "It promoteth growth and it is very powerful."

'And the President went before the Executive Board and he spoke unto them, saying, "This powerful new project will promote the growth of the company."

'And the Executive Board looked upon The Project and saw that it was good."

-- Source Unknown

Mississippi River Symposium to be held at the Annual Meeting of the American Fisheries Society

Larry Hesse, Nebraska Game & Parks Commission has organized a major symposium (possibly two full days in length) on the rivers of the Mississippi River Basin to be held in conjunction with the Annual Meeting of the American Fisheries Society in Rapids City, South Dakota on September 13-17, 1992. Larry has organized the symposium to help stimulate the communication process between fisheries researchers and managers, basinwide.

The objectives of the symposium are:

- To organize a description of existing information on the geology, hydrology, morphology, native fish species, introduced fish species, standard methods used to survey fisheries, human impacts on the physical system, and the values associated with the riverine resource.

- To define existing or planned management that might be useful for fisheries management in other rivers within the basin.

- To identify minimal requirements for the restoration of important fish stocks and other aquatic resources.

Papers presented at the symposium will view each river discussed from an ecosystem perspective, and discuss their relative contribution as a tributary to the larger Mississippi River ecosystem. Whenever possible, emphasis will be placed on the impact of an altered hydrological cycle, sediment and organic matter dynamics, and relative loss of side-arm connectivity as factors in the changing environment for aquatic life in the River.

So far, papers will include discussion of the following rivers: Arkansas, Big Muddy, Illinois, Upper Mississippi, Wabash, Allegheny, Kansas, Platte, James, White (SD), Powder, Pigeon, Yazoo, Sabine, Kaskaskia, Wisconsin, Kanawha, Minnesota, White (AR), Kankakee, Yellowstone, Ohio, Embarrass, Iowa, Cedar, Little Wabash, St. Croix, Vermillion, and Missouri.

Citizen Monitoring

Water quality monitoring by students, sportsmen's groups, and citizens at large is becoming popular in many areas of the country.

One large river project of special note is being conducted by midwestern high school students, and being coordinated by Southern Illinois University at Edwardsville. What started out as a pilot Illinois Rivers Project involving 8 Illinois high schools in 1990 has grown to include 84 schools in a four state region and added the title "The Midwestern River Project" to its name. With scientific literacy as the ultimate project goal, students from each participating school collect and analyze water samples from various test sites along the Illinois and Mississippi rivers. The project also includes study of river historical, social, and/or economic implications, thus involving students from classes across the curricular areas of science, social studies, and English. SOILED NET, a telecommunication network linking all of the participating schools with each other and the Project headquarters, provides a technological framework for many of the Project's activities.

Funding has come from a variety of sources. The Illinois State Board of Education funded the first 35 schools who joined the network. The U.S. Fish & Wildlife Service provide funds in January 1991 to train students from 13 schools in IA, MN, and WI. In April, 1991, 24 schools were added through funding from the Illinois Board of Higher Education Dwight D. Eisenhower Title II Program. The Illinois Department of Energy and Natural Resources, and Illinois Bell have both provided funding for production of the Project's student-authored publication, Meanderings.

Meanderings and the Project newsletter, the *River Watcher's Log*, provide the opportunity for students to have their work published. From study of the river and surrounding

communities, scientifically and otherwise, students produce reports, articles, essays, and creative writings. In 1991 The best of the written materials were compiled into four regional editions of Meanderings '91. Students are also invited to submit articles for publication in the newsletter. The *River Watchers' Log* keeps its subscribers updated on the latest project news, in addition to pertinent environmental information.

The Project held its *First Annual Illinois Rivers Project Student Congress* in 1991. Students from 30 high schools in IL gathered in Quincy to share ideas and experiences gained from the Project. Response was enthusiastic and plans are being made for next year's *Congress*.

Future plans include development of a formal "rivers Curriculum" in the areas of chemistry, biology, and geology/geography that will be applicable to any river in the world. A group of teachers/writers and content specialists gathered in August to draft the curriculum.

For additional information on the Project contact Dr. Robert A. Williams or Cindy Bidlack, Project Coordinator, The Illinois Rivers Project, Southern Illinois University, P.O. Box 1122, Edwardsville, IL, (618) 692-3788.

Other sources of information for individuals or groups who would like to find out more about volunteer monitoring include a newsletter called *The Volunteer Monitor*. For information contact: Elanor Ely, Editor, 1318 Masonic Avenue, San Francisco, CA 94117 (415) 255-8049.

Also, the Isaak Walton League produces a video called "A Guide to Water Quality Monitoring". For further information on that contact: The Isaak Walton League of America, 1401 Wilson Blvd., Level B, Arlington, VA 22209 (703) 528-1818.

Also, some state Departments of Natural Resources or Conservation have initiated public water quality monitoring programs.

River Related Contaminants Studies Underway at Cooperative Fish & Wildlife Research Units in the Basin

The U.S. Fish & wildlife Service has provide the following list of contaminants studies underway in the Basin and pertinent to interjurisdictional rivers. The State location of the Coop Unit where the study is being completed is noted by the appropriate State abbreviation at the end of each project title.

- Biological effects of contaminant transfer to larval fish from resuspended sediments - Upper Mississippi River - IA
- Water chemistry and fish community responses to episodic stream acidification - PA
- Demonstration mitigation of acidity in Pennsylvania streams, with studies of biological effects - PA
- Mitigation of surface waters acidified by precipitation in eastern Tennessee - TN
- Effects of watershed acidification on detrital processing, benthic community metabolism, and macroinvertebratres - WV
- The effects of supersaturation of dissolved gasses on the fishery of the Bighorn River downstream of Yellowtail Reservoir - MT
- Fly ash contaminant studies - NY
- Water quality in the Tennessee coal fields - TN
- Impacts of the coal industry on endangered aquatic organisms - TN
- Ecotoxicological studies at the Clinch River Steam Plant, VA - VA
- Toxicity of coal-related contaminants to early life stages of freshwater mussels - VA
- Effects of PCB's on reproduction of striped bass - NC
- An assessment of environmental contaminant threats associated with irrigation drainwater materials - MN
- Effects of toxicants on the predator/prey interactions of aquatic organisms - IA
- Biological effects of suspended sediments and associated contaminants on freshwater mussels - Upper Mississippi - IA
- Field Assessment of biomarkers in larval fish - IA
- Fate and effects of new generation chemicals and nonpoint pollution on aquatic resources - MO
- Avoidance of pulp mill effluent by sauger in Kentucky Lake - TN
- Effects of herbicides on sunfish reproductive behavior - TN
- Development of a procedure to determine the integrity of surface water quality in streams of coal producing regions - TN
- Effects of sewage treatment plant effluents on the molluscan fauna of the Clinch River, Virginia - VA

Anyone interested in obtaining additional information on any of these studies can contact the appropriate Coop Unit or Mr. Don Steffeck, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Suite 330, Arlington, VA 22203, (703) 358-2148.

Warmwater Fisheries Symposium I

Copies of the Warmwater Fisheries Symposium, Technical Report RM-207, are still available upon request from

the Rocky Mountain Forest and Range Experiment Station. Copies can be obtained from Publication Distribution, Rocky Mountain Forest Service and Range Experiment Station, 3825 East Mulberry, Ft. Collins, CO 80524, or by calling (303) 498-1100.

CONGRESSIONAL ACTION ON BILLS PERTINENT TO THE MRDS

Interjurisdictional Rivers

Authorizes preparation of a national strategy for interjurisdictional rivers management, and tests the feasibility of the Mississippi Interstate Cooperative Resource Agreement (H.R. 4169). Sponsored by Gunderson (R/WI) and Owens (D/UT), as well as eight additional co-signers.

Wild and Scenic Rivers

Allegheny River (PA) Wild and Scenic River Bill passed Feb. 19 (S. 606).

Two hundred miles of eight Ouachita and Ozark national forest rivers designated as wild and scenic. S. 4183 passed in November. Companion House bill (**H.R. 4183**, Hammerschmidt R/AR) under review by Interior national parks panel.

Clean Water Act

Reauthorization bill circulating in draft form (S. 1081). No markup scheduled.

Irrigation/Drought

Bureau of Reclamation given leeway of 10 years to move water to protect fish and wildlife, Senate-passed compromise of H.R. 355.

Endangered Species

Reauthorization bill (H.R. 4045 - Studds (D/MA) introduced in November; late spring hearings planned. National Academy of Sciences study of bill's biological aspects underway.

Environmental Education

Authorizes a Morris K. Udall foundation and scholarships to fund students studying the environment. Senate passed **S. 2184**, a slightly different version than the earlier S. 1176. Companion house bill (H.R. 4185) introduced (Obey D/WI).

MEETING ANNOUNCEMENTS

Lower Mississippi River Coordination Group Meeting

The U.S. fish & Wildlife Service and the U.S. Army Corps of Engineers are jointly sponsoring a meeting April 21-22, 1992 in Vicksburg, MS to discuss the possibility of establishing a Lower Mississippi River coordination group similar to the Upper Mississippi River Conservation Committee (UMRCC), or other regional watershed management compacts.

Representatives from state fish and wildlife and water quality agencies (AR, KY, AL, MS, MO, and TN) are invited to attend. The meeting could have far-reaching implications for the future management of the lower river.

The UMRCC has played a key role in achieving more balanced management on the Upper Mississippi. Their initiatives and persistence were largely responsible for obtaining authorization and funding for the $288 million Environmental Management Program currently being implemented on the Upper Mississippi.

Mississippi River Research Consortium

The Mississippi River Research Consortium will hold its 24th Annual Meeting at the Holiday Inn in LaCrosse, Wisconsin on April 30 - May 1, 1992. The research consortium is an organization of Academic, State, Federal, and private researchers on the Mississippi River. The group meets

annually in LaCrosse and invites participation from researchers over the entire Mississippi River.

This year's session includes many papers generated from the Upper Mississippi's Environmental Management Program.

Session topics include: Sediments/Sedimentation, Weaver Bottoms, Fishery Studies, Biotic Communities, Water Quality, Mussels/Mollusks, Aquatic Plants, and Water Level/Velocity.

Copies of the Program and registration information can be obtained from Dr. Joe Wlosinski, 575 Lester Ave., Onalaska, WI 54650, (608) 783-7550.

American Fisheries Society Fisheries Administrator's Meeting

The spring Fisheries Administrator's Meeting will be held at the Ramada Inn (Market Street) in Wilmington, North Carolina on May 16-19. Early arrivers should contact Frank McBride (919) 733-3633 for information on fishing or other recreational opportunities. Hotel reservations can be made by calling (919) 799-1730.

First Annual MICRA Meeting

The First Annual MICRA Meeting will be held in conjunction with the spring AFS Fisheries Administrator's Meeting in Wilmington, North Carolina on May 16-19. A half day meeting is planned either before or after the Administrators meet. Details are being worked out. Agenda items will include discussion of task prioritization, pending legislation, funding, and other administrative matters. Hotel reservations can be made by calling (919) 799-1730.

Multi-Objectives Approach to Floodplain Management

This meeting is being sponsored by the Association of State Floodplain Managers (ASFM), and will be held in Grand Rapids, MI on May 17-22. The meeting will focus on Wetland Management; Wild, Scenic, and Natural River Management; Emergency Response; Watershed Management; Coastal Zone Management; and Soil Erosion and Sedimentation. For more information contact: ASFM, P.O. Box 2051, Madison, WI 53704-2051 or call (608) 266-1926.

UMRCC Mussel Symposium

A symposium entitled, "The Conservation and Management of Freshwater Mussels" is planned for October 12-14, 1992 at the Embassy Suites Hotel in St. Louis, Missouri. The symposium is being sponsored by the Upper Mississippi River Conservation Committee.

The symposium will focus on:

- *Regulations* - State, regional or system updates, management strategies for commercial and non-commercial spp., future trends and needs, sanctuaries, limitations on industry
- *Commercial Harvest* - Upper Mississippi River status, regional assessments of pressure, industry status, concerns and trends, international trade implications
- *Conservation* - culture, early life history, reintroduction, stocking, restoration, habitat requirements and management, habitat alteration, indices of populations, exotics update, endangered species recovery efforts, etc.
- *Sampling Methods and Data Management* - equipment and collection strategies, evaluation techniques, sampling designs, software applications
- *Environmental Awareness* - legislative needs, political processes, export taxes, resource rent, user fees

More information on the Symposium can be obtained from Kurt Welke, Wisconsin Department of Natural Resources (608) 326-0233 or Jon Duyvejonck, UMRCC Coordinator (309) 793-5800.

River Crossings

Volume 1 May/June 1992 Number 3

Interjurisdictional Rivers Bill Update

H.R. 4169, cited as the "Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1992." is sponsored by Congressman Steve Gunderson (D/WI).

Since its introduction, Wayne Owens (D/UT), Joe Kolter (D/PA), William J. Jefferson (D/LA), Chester G. Atkins (D/MA), William H. Natcher (D/KY), Jerry F. Costello (D/IL), Jerry Huckaby (D/LA), Arthur Ravenel, Jr. (R/SC), W.J. (Billy) Tauzin (D/LA), Doug Bereuter (R/NE), Carroll Hubbard, Jr. (D/KY), and Jim McCrery (R/LA) have also signed on as co-sponsors. More co-sponsors are needed to advance the bill through the Merchant Marine and Fisheries Committee.

Advocates from the Sport Fishing Institute, the American Fisheries Society, Izaak Walton League, and American Rivers have been lobbying on the "Hill" in Washington for the bill. Congressman Studds (Chairman of the SubCommittee on Fisheries and Wildlife Conservation and the Environment has given no assurance that the bill will be considered this session.

Congressman Gunderson reportedly has plans to meet with Studds in the next few weeks to encourage the bill's consideration yet this year. Sources close to Congress say that in reality we are really probably laying groundwork for next year, because the bill will likely not be considered until that time.

In the meantime, advocates of the bill should continue to contact their Congressmen to get more cosponsors lined up. If the bill doesn't get considered this year it will have to be reintroduced next year, but that should be no real problem and any Congressman we get signed on this year should be willing to co-sponsor a new similar bill next year.

Potential co-sponsors can be directed to contact Brad Cameron, Washington, D.C. (202) 225-5506.

Federal Agency Briefing on MICRA

The U.S. Fish and Wildlife Service sponsored a briefing for federal agencies interested in MICRA in Washington, D.C. on May 15th. Invitations were sent to the Army, Corps of Engineers; Soil Conservation Service; EPA; Forest Service; National Marine Fisheries Service (NMFS); Bureau of Land Management; Bureau of Indian Affairs; Bureau of Reclamation, Department of Energy; and National Park Service. Of those, five attended the briefing (Army, NMFS, Indian Affairs, Reclamation, and Energy).

Coordinator Rasmussen presented the briefing and supplied participants with briefing packets. The briefing itself went well, but we would liked to have seen all invited agencies participate. Those who didn't attend were sent copies of all briefing materials.

Up to this point five entity members have joined MICRA. Those include three federal agencies and two Indian tribes: U.S. Fish & Wildlife Service, Tennessee Valley Authority, Bureau of Reclamation, Chippewa Cree Tribe, and The Chickasaw Nation.

Our efforts will continue to recruit additional federal, Indian, and private entity members.

Election of MICRA Officers

The Steering Committee held their Annual Meeting in Wilmington, NC on May 19th. A total of 12 States and 2 federal agencies were represented.

According to procedures agreed to at the first MICRA Annual Meeting, held in Snowbird, UT in May 1991, Wes Sheet's two-year term as Chairman will expire on June 30, 1993. A Vice Chairman elected every two years (the first to be elected now) will rise to the Chairmanship after serving in a training role for a year. Policy Sub-Committee members for the Entities, Missouri River, and Lower Mississippi River expire on June 30, 1992 and are up for re-election. A Treasurer position was created at the Wilmington meeting to handle MICRA funding.

Since all MICRA members are unable to attend all of our meetings, election of officers will be completed through a mail ballot. A Ballot will be circulated to all Steering Committee members in early June. Current Policy Sub-Committee members will be listed as potential candidates for re-election, Jim Fry (MO) will be listed as a candidate for Vice Chairman, and Marion Conover (IA) will be listed as a candidate for Treasurer. Bob Hanten (SD) will also be listed as another candidate for Missouri Basin representative.

MICRA Priorities

A MICRA Task Prioritization exercise was completed over the winter months by the Steering Committee. Results of that effort are in draft form and will be printed in final form shortly. All Goals, Objectives and Tasks were prioritized separately.

The following priority has been given to MICRA Goals:

(1) Develop a formal framework and secure funding for basin-wide networking and coordinating mechanisms that complement existing and emerging administrative entities.

(2) Periodically identify and prioritize issues of concern in the Mississippi River Basin for coordinated research that supports cooperative resource management.

(3) Improve communication and coordination among entities responsible for fisheries resource management in the Mississippi River Basin.

(4) Develop an information management program based on standardized methods for collecting and reporting fishery resource data, basin-wide.

(5) Identify and coordinate fishery management programs to address species and habitat concerns from an ecosystem perspective.

(6) Develop public information and education programs to disseminate information that supports fishery resource management in the Mississippi River Basin.

(7) Determine and document the socio-economic value of fishery resources and related recreation.

(8) Preserve, protect and restore fishery habitats basin-wide.

(9) Develop compatible regulations and policies for fishery management to achieve interstate consensus on allocation of fishery resources.

River Crossings

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MICRA Policy Committee
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Jim Fry, Missouri Department of Conservation, Jefferson City, Upper Mississippi River Member
Larry Peterman, Montana Department of Fish, Wildlife and Parks, Helena, Missouri River Member
Frank Jernejcic, West Virginia Department of Natural Resources, Fairmont, Ohio River Member
Gary Edwards, U.S. Fish & Wildlife Service, Washington, D.C., Entity Member

MICRA Coordinator/Executive Secretary and Newsletter Editor
Jerry L. Rasmussen, U.S. Fish & Wildlife Service, Columbia, Missouri

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River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

(10) Develop protocols, policies and regulations for disease control, introduction of exotics, maintenance of genetic integrity, and maintenance and enhancement of indigenous species.

The MICRA Task Prioritization document will be used as a "guide", not a "bible", to implement various MICRA efforts.

MICRA Paddlefish/Sturgeon Committee Being Formed

Concern for the paddlefish was the major resource issue which served as a catalyst to bring the Mississippi River Basin states together to form MICRA in the late 1980's.

In February of this year, the U.S. Fish and Wildlife Service sponsored a paddlefish/sturgeon workshop in Atlanta to exchange information both within the agency and between several of the States regarding paddlefish and sturgeon activities.

That workshop made it painfully obvious that a much greater emphasis needs to be placed on communication, coordination, and exchange of information than in the past to coordinate, on a national level, efforts being made and resource dollars being spent to manage, protect and restore these species.

Recognizing MICRA's long standing interest in these species and its obvious strategic capability, recommendations were made for MICRA to serve as the mid-continent coordination point for all paddlefish activities, and for sturgeon activities effecting those species which occur within the basin (i.e. lake sturgeon, shovelnose sturgeon, and pallid sturgeon).
This recommendation is currently being made more formally in an internal "guidelines" document being developed for the Fish and Wildlife Service by an interagency Committee formed as a result of the paddlefish/sturgeon workshop.

That Committee has identified the following problems needing to be addressed:

(1) There is a need to develop a National Strategy for the management of paddlefish and sturgeon resources.

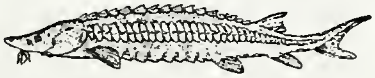
(2) There is a general lack of understanding and awareness of the value of paddlefish and sturgeon species.

(3) Life history and habitat requirements for paddlefish and sturgeon are poorly understood.

(4) Culture and stocking of paddlefish and sturgeon may be needed to preserve, maintain, or enhance some stocks, but federal, state and private efforts are largely uncoordinated.

(5) Illegal take, transport, commerce, and habitat destruction are impacting some populations of paddlefish and sturgeon species.

The MICRA Steering Committee has responded to their own stated interest, as well as to the guidelines being developed by the Fish and Wildlife Service proposal, by taking immediate action to form a MICRA Paddlefish/Sturgeon Technical Committee.



Candidates for that Committee are currently being identified by Steering Committee members. We anticipate that the MICRA Paddlefish/Sturgeon Committee will be formed by mid to late summer, and begin operation in the fall. The Committee's first order of business will be to develop its own mission and operational procedures. The MICRA Paddlefish/Sturgeon Committee will not answer to any one State or Agency hierarchy, but to the MICRA Steering Committee.

Missouri Biologists Successfully Spawn Pallid Sturgeon

Jerry Hamilton and Kim Graham, pioneers in the spawning of both paddlefish and sturgeon, successfully spawned two female pallid sturgeon and one female pallid/shovelnose hybrid at Missouri's Blind Pony hatchery in mid April. Some 91,000 pallid and 27,000 hybrid sturgeon eggs were fertilized.

Hamilton and Graham anticipated that hatching success should be about 90%, based on the visual condition of the eggs at spawning. However, by the end of April hatching success had fallen to about 36%.

Hamilton suspects that the eggs were contaminated with some form of environmental pollutant in the parents, because the eggs were hatching in much the same way as he had seen contaminated eggs hatch before.

A 30 gm. sample of the eggs and hatching fry has been shipped to the Fish and Wildlife Service's Contaminant Research Center at Columbia, MO for analysis for organochlorines and heavy metals. Results of the analysis will be compared to previously analyzed fry and eggs in the Service facilities database in about 90 days.

The remainder of the hatching fry will be used for research and educational purposes. Feeding trials are being conducted at the Blind Pony facility, at the Valley City National Fish Hatchery, at the Gavins Point National Fish Hatchery, and at the Neosho National Fish Hatchery.

Some may be sent to the Aksarben Aquarium in Gretna, NE, and the remainder will be used for genetics study, development of technical keys, or destroyed. Non will be released into the wild because of their unknown

genetic purity, and consequent potential impact on any existing wild populations.

For further information contact Mark Dryer, Chairman, Pallid Sturgeon Recovery Team, U.S. Fish & Wildlife Service, Bismarck, ND, (701) 250-4491.

Contaminants in Sturgeon

Chemical contamination of pallid sturgeon and their habitat is a major concern of the Pallid Sturgeon Recovery Team.

High concentrations of polychlorinated biphenyls (PCBs) and organochlorine pesticides (chlordane, dieldrin, and DDT) have been documented in North Dakota by Dick Ruelle and Kent Keenlyne (U.S. Fish and Wildlife Service), indicating contaminants as a potential problem affecting recovery of the species.

Reports available on contaminants in fish of the Missouri River and its tributaries are available from the Service's Region 6 Environmental Contaminants Program Coordinator Tom Jackson (303) 236-8180, or from Contaminants Specialists in South Dakota [Dick Ruelle (605) 224-8693], Kansas [George Allen (913) 539-3474], or North Dakota [Dan Welsh (701) 250-4492].

Source: Pallid Sturgeon Recovery Update (April, 1992)

Upper Missouri River Blue Sucker Study

The Fish and Wildlife Service Enhancement Office in Bismarck, ND is gathering data on Blue Sucker populations in Montana, North Dakota, South Dakota, Nebraska, and Kansas. Data gathered will be used to prepare a preliminary report on the status of the species in the Upper Missouri River and its major tributaries.

The Bismarck Office would appreciate receiving any available information on collection location, dates, and abundance of blue suckers in MT, ND, SD, NE, and KS. Contact Selena Werdon (701) 250-4414.

National Fish Refuge System

Biologists in various parts of the Basin are beginning to talk more and more about the possibility of creating a National Fish Refuge System.

Such a System could come as spinoff legislation from the National Recreational Fish Policy, the President's Policy of "No Net Loss of Wetlands", or other such administrative measures.

The concept is not without precedent, in that the legislative history of the Upper Mississippi River National Wildlife and Fish Refuge, as well as subsequent appropriations, indicate that a major reason for purchase of that refuge was for fish propagation [Fairchild, M. (1982) The legal and Administrative History of the Upper Mississippi River Wild Life and Fish Refuge. Looseleaf, Unpubl. Available through the library of the Upper Mississippi River Conservation Committee, 1830 Second Avenue, Rock Island, IL. 69 pp.].

The Izaak Walton League was largely responsible for creating the Upper Miss Refuge (1924), and their primary interest was in protecting the spawning habitats of smallmouth bass and northern pike. At the time, there was extensive fish rescue operations going on to prevent fish kills in isolated backwaters and chutes. However, once water levels were stabilized after impoundment for commercial navigation in the 1930's, much of the interest in managing the refuge for fish subsided. Federal agencies were reorganized in 1940, the U.S. Fish and Wildlife Service was formed from the Bureaus of Fisheries (Commerce) and Biological Survey (Agriculture), the country entered World War II, and the rest is history.

A National Fish Refuge System may be the only way to adequately protect and restore migratory and interjurisdictional fish species such as coastal striped bass, paddlefish, and sturgeons. The need is especially apparent on large channelized rivers such as the lower Missouri and lower Mississippi.

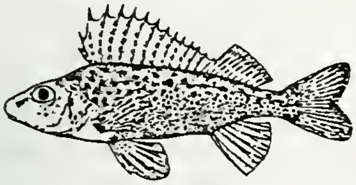
Biologists from the Missouri Department of Conservation and U.S. Fish and Wildlife Service's Columbia Missouri Fisheries Resources Office plan to meet in early June to discuss this and other angles which might be available to protect large riverine fish species on the Missouri River.

U.S. - Canadian Task Force Seeks More Than $6 million to Halt Ruffe Invasion

Just six years after hitchhiking across the Atlantic, the European river ruffe has become the most abundant fish in the Great Lakes' Duluth-Superior harbor. The ruffe appears to be out competing native fish for food and habitat.

An international Task Force of

fisheries experts has called for immediate action to avoid devastating consequences. The ruffe is a spiny fish with no food value. Both yellow perch and young walleye have trouble competing with it. The ruffe grows fast, and is often sexually mature at one year. The fish may be sexually active for 6-7 years.



Researchers have concluded that the ruffe poses a major threat to North American waters. If appropriate and massive action is taken immediately, the ruffe may be contained at manageable levels in the Great Lakes.

Dr. Fred Meyer, Chairman of the Task Force cautions, "The window of opportunity is only two years. If we don't control the ruffe in 1992-1993, exploded growth will make it impossible to manage."

Statistics indicate that this is not an exaggeration. The ruffe were first detected in 1986. The 1991 population is estimated at 1.8 million adults and over 150,000 young-of-the-year. The dramatic growth of the ruffe population was contrasted by a dramatic decline, of 50 percent in three years, of the yellow perch and other native species, including young-of-the-year walleye. This closely parallels experiences in Europe (80 % decline of European perch in Loch Lommond) and Russia (50 % decline of whitefish)

Current management plans include the following objectives: contain the ruffe to present sites; increase biological understanding of the ruffe; reduce populations of ruffe at present sites; and conduct research on control methods.

Minnesota and Wisconsin fishery managers have tried to control the ruffe by heavily stocking the harbor with walleye and northern pike and by limiting the catch of those two predators. That effort is continuing, although studies show that, so far, walleye and pike have preferred to continue dining on other forage. However, bullheads are eating some of the ruffe.

Another priority is to develop gear and procedures for the physical removal of 80-90 percent of the ruffe population in Duluth Harbor. Time and money must be appropriated for field trials on chemical control of the ruffe. Sterilants will be tested on substitute species in preparation for a sterile-male release program.

Ruffe Task Force members have a very real concern that the ruffe could expand to the inland waters of the United States and Canada. If the ruffe can migrate to key areas, expansion can occur easily. Once in major river systems, the ruffe would have access to the entire continent.

The ruffe has already spread into some adjacent Lake Superior inlets in Minnesota and Wisconsin. And it was discovered last fall in the harbor at Thunder Bay, Ontario. That's 180 miles northeast of Duluth. It seems to have gotten to Thunder Bay in a ship's ballast water -- the same way it originally got to Duluth.

On the positive side, the U.S. and Canada are imposing new restrictions that will require ships entering the St. Lawrence Seaway to exchange their fresh water ballast for salt water before entering interior waterways. The ruffe presumably cannot survive in salt water.

"Why didn't this happen sooner? If it had maybe we wouldn't have either the ruffe or the zebra mussel!"

Restrictions are also needed, however, for ships traveling only within the Great Lakes to prevent transport of ruffe to uninfested lake ports.

Source: EcoNet (For the Fish and Wildlife Partners of the Great Lakes Initiative) Vol. 1, No. 1, and Minneapolis Star Tribune (3-22-92)

Tropical Fish in Montana?

That's right! The sailfin molly, the shortfin molly, the variable platyfish, and the green swordtail all occur in some of Montana's warm springs and ponds. Temperatures in these habitats range from 68 to 95 degrees F.

The natural range of these species is in the Atlantic drainage from northeastern Mexico south. These fish are certainly not fitted for life in Montana waters, except in the rare warm springs and ponds. All are common aquarium fish which likely found their way into Montana's waters through illegal release.

Source: Fish Line - Reading the Waters, Vol. 2, No.3, Montana Dept. of Fish, Wildlife & Parks

New Invertebrate Species Identified in Stockton Lake, MO

Norman Youngsteadt; Springfield City Utilities, Springfield, MO; isolated a new species of cladoceran (*Daphnia lumholzi*) in Stockton Lake, an impoundment of the Sac River (tributary to the Osage) in September 1991. The cladoceran, identified by Dr. John Havel (Southern Missouri State University in Springfield), is native to reservoirs in Australia, southern Asia, and east Africa.

Further study is needed to determine the present distribution of this species, which appears to be rapidly extending its range. The mechanism whereby this small crustacean dispersed to North America is unclear. Its eggs can resist drying, so they can be moved by wind, migrating birds, or the inadvertent movement of dried mud by humans.

The impact of this exotic species on aquatic communities is unknown, but its large spines make it difficult for fish to eat, so it may become troublesome for reservoir fisheries if it displaces native species of *Daphnia*.

Records on sightings and isolations for

identification should be sent to Dr. John Havel, Department of Biology, SMSU, 901 South National Avenue, Springfield, MO 65804.

Source: Watershed News, Watershed Committee of the Ozarks, Springfield, MO, Spring 1992.

Columbia River Tops List of Waters At Risk

"Rivers today are in worse shape than they've ever been" according to Kevin Coyle, President of American Rivers, a Washington based group which issues an annual top-10 ranking of North America's "Most Endangered Rivers".

American Rivers

Columbia and Snake Rivers (ID, WA, and OR) - At least 214 native fish species are imperiled along the heavily dammed river, 200 salmon runs are threatened. Adequate fish ladders and habitat improvements are needed.

Alsek and Tatshenshini Rivers (AK and British Columbia) - Bears, salmon, eagles and other wildlife dependent on the icy rivers could be poisoned if the proposed Windy Craggy acid-leach copper mine proceeds 15 miles from the U.S. border.

Great Whale River (Quebec) - Damming and diversion, as part of Hydro-Quebec's 20,000-megawatt hydroelectric project, threatens waterfowl nesting grounds, beluga whale spawning areas, caribou calving grounds and a home of a rare freshwater seal, as well as the lives of some 10,000 Native Americans in James Bay.

The Everglades (FL) - Shallow "River of Grass" is on the verge of collapse caused by agricultural pollution, encroaching development and diversions of water sources. Already, 90% of wading bird population has vanished.

American River (CA) - Proposed 425-foot high Auburn Dam could devastate 34 miles of river and canyons, thwarting popular activities such as whitewater boating, hiking and horseback riding.

Colorado River (AZ) - Glen Canyon Dam 16, miles upstream from Grand Canyon National Park, fluctuates water levels, causing beach erosion and hindering river recreation and fishing. Last year's No. 1 imperiled river, it should be helped by new interim flow protection measures mandated for the Grand Canyon section.

Mississippi River (MN, WI, IA, IL, MO, KY, TN, AR, LA, MS) - Oil spills from barges may be the most visible problem, but even more pervasive is runoff of soil, agricultural chemicals, and industrial waste.

Penobscot River (ME) - Proposed new hydroelectric dam could threaten Atlantic salmon restoration efforts.

Beaverkill & Willowemoc River System (NY) - Catskill Mountains premier trout streams face growing development pressures that are reducing flows and clearcutting is degrading riverbanks.

Blackfoot River (MT) - Logging, grazing, agricultural runoff, diversions, mining wastes and over-fishing are slowly killing this renowned cutthroat trout stream in the scenic Blackfoot Valley.

Last year American Rivers only listed the Upper Mississippi (from Minneapolis to St. Louis) as endangered because of the hazards to rare animals and the 500-mile National Wildlife and Fish Refuge along the river.

This year the group decided to include both the upper and lower Mississippi because, according to Suzi Wilkins, "What happens in the north eventually will have an impact when the river reaches New Orleans and the Gulf."

American Rivers said the 150 major chemical manufacturers along the lower Mississippi discharged 296 million lbs. of toxic chemicals into the river either directly or through sewage treatment plants.

"An additional 591 industries discharge contaminated wastewater into the River --giving the Lower Mississippi the sobering nickname, 'Cancer Alley'", the groups report said.

Source: USA Today (4-9-92) and The Associated Press, St. Louis (4-10-92)

Retracing the Steps of Lewis and Clark

River conservationists hope to focus Congress's attention on the nation's degraded waterways this summer when they set out from Missouri to retrace Lewis and Clark's 4,000 mile trek across the Great Northwest.

Tom Warren, an Oklahoma chiropractor, and John Hilton, a Missouri photographer entered the Missouri River at St. Louis on June 1 and plan to arrive at the mouth of the Columbia River by mid July near Astoria, Oregon. "Lewis and Clark went out to find what was there. We're going to see what's left," Hilton said.

This is believed to be the first attempt to duplicate Lewis and Clark's expedition undertaken in 1804 to explore the Louisiana Purchase and

search for a water passage to the Orient. American Rivers organized the trip to dramatize the pollution, diversions and ecological damage the route has suffered over the past two centuries.

Warren and Hilton will travel upstream from St. Louis via a 21-foot jet boat, trailer around the mainstem reservoirs, bicycle about 350 miles over the Rocky Mountains, and canoe 75 to 300 miles into Idaho and on to the Pacific Coast, depending on water levels.

Lewis and Clark made the trip with 30-foot long keel boats and two canoes. A crew of 45 men and 10,000 lbs. of equipment assisted as they sailed, paddled, poled, and portaged the boats across the wilderness.

In addition to hydropower projects that have disrupted both upstream and downstream movements of salmon in the Columbia River; the modern-day explorers will encounter industrial waste; runoff from farm chemicals; and sedimentation and erosion accelerated by logging, mining, and other commercial development.

"We want people to draw a correlation between what was there 188 years ago and what is there today," said Warren. "We're going to stand on the site where they were and read from their diary, like when they said they looked this direction and saw 10,000 buffalo. We will do a sort of play-by-play -- a before and after," he said.

American Rivers has established a 900 number for anyone who wishes to obtain daily updates on the journey. Callers who dial the number, (900) I-GO-WEST, will be charged $1.95 per minute. The 3 to 5 minute tape recorded messages will compare what Lewis and Clark witnessed, according to diaries, with what Warren and Hilton see. Proceeds will be used primarily to defray the costs of the trip and the phone line, with 10 % set aside for American Rivers.

Source: Associated Press, Washington, D.C. (6-1-92)

Missouri River GAO Study Stands Up To Critics

An internal review of the GAO study which found the Corps of Engineers had shortchanged the recreation industry in Montana, North Dakota, and South Dakota revealed no problems. The audit found that the study is sound, the research is good and the conclusions stand.

The original GAO Study Results in Brief read as follows:

> "The Corps followed a drought contingency plan in 1988, 1989, and 1990 in releasing water from the reservoir system. Acting consistently with the plan, the Corps reduced winter release rates, shortened navigation seasons on the Missouri River, and reduced water levels in the navigation channel. As a result, 17 percent less water was released during the 3-year period than would have been released under normal operating conditions. The drought and the Corps' response to it adversely impacted all of the purposes served by the reservoirs except flood control.
>
> 'The Corps' drought contingency plan, however, is based on assumptions about the amount of water needed for navigation and irrigation made in 1944 that are no longer valid, and the plan does not reflect the current economic conditions in the Missouri River basin. The Corps' ongoing comprehensive study of its operation of the reservoir system is expected to address these issues. Notwithstanding the results of its study, the Corps maintains on the basis of its interpretation of the authorizing legislation that unless it obtains congressional approval to change existing operating priorities, it must continue to give recreation a lower operating priority than other authorized purposes even is this lower priority results in decreased system benefits. GAO sees no appropriate basis for the Corps' view. A lawsuit filed in federal court by three upper-basin states questions the legality of the Corps' position on recreation" (emphasis added).

Senator Charles Grassley (R/IA) and Christopher Bond (R/MO), who requested the independent re-examination of the report, are calling it a "whitewash." Congressmen from Montana, South Dakota, and North Dakota, on the other hand, love it! The northern states' lawsuit is due to come to trial in September.

The Corps is caught in the middle, looking for some common ground. A logical compromise may be a split navigation season which some biologists have offered up as a way of meeting everyone's needs.

Under the split season scenario, high flows would be maintained in the river during the Spring months to allow barges to deliver farm fertilizers and other chemicals to upstream ports. Water levels would be dropped during the summer months, and then raised again during the fall to allow barges to deliver the season's harvests to downstream markets.

This would seem to meet critical demands for navigation, water conservation, and recreation. It would have the added ecological benefit of, at least partially, duplicating the rivers natural hydrograph (i.e. spring and fall floods, with low winter and summer flows). It would also make downstream river reaches more

attractive for summer recreation on the exposed islands and beaches.

It seems that, instead of lawsuits, all parties would be well advised to work toward compromise and common ground. Perhaps the solution lies in some form of resource master plan as was developed for the Upper Mississippi to solve the that river's dredged spoil placement problem and navigation conflicts.

Under that scenario everyone lays their cards on the table, begins open dialogue, and works toward a win-win solution.

Kissimmee River Environmental Restoration "First-of-its-Kind-Undertaking"

"It has been stated that environmental problems are emotional; environmental issues, political; and environmental solutions, technical" -- M.K. Loftin, Assistant Director, Water Resources Division and Project Manager, Kissimmee River Restoration, South Florida Water Management District.

Thirty years ago, the Army Corps of Engineers (COE), in partnership with the State of Florida, began construction of a massive flood control project on the Kissimmee River in south-central Florida. The flood control solution was channelization of the river, converting its 103-plus miles of shallow, meandering river channel and floodplain to a 56 mile excavated canal, known as C-38. The canal, completed in 1971, runs from Lake Kissimmee to Lake Okeechobee.

The canal is actually composed of six water control structures that create six navigation pools which drop the river a total of 36 ft. over its length. Each structure is equipped with a 30 ft. by 90 ft. lock to raise and lower boats with drafts of up to 5.5 ft.

The project has been credited with controlling flooding, but since its completion waterfowl populations have plunged 90% and problems with the downstream Everglades have continued to mount.

Now, twenty years after construction was completed, the COE, in response to a 1990-enacted Congressional directive, has completed a feasibility report and environmental impact statement that calls for the environmental restoration of the Kissimmee River and the return of the river's original meandering state at an estimated cost of some $368 million.

The project will restore 26,500 acres of wetlands, 40 square miles of ecosystem, and 43 miles of meandering river. Fifteen years will be necessary to complete the reconstruction project, at an average annual cost on the order of $45 million. The project will be funded with federal (50%)/state (50%) cost-sharing, with Florida providing all land and easement acquisitions prior to the start of construction.

Fee acquisition of the floodplain up to the five-year flood line will involve approximately 58,487 acres, and an easement acquisition of lands between the five-year and the 100-year flood lines will involve an additional 9,143 acres. Florida has its land acquisition program well underway under the state's Save Our Rivers legislation, enacted in 1981.

The Florida legislature and three successive governors have endorsed the restoration idea. The Bush Administration has also thrown its support behind the project.

This potential success story in environmental restoration didn't happen by accident!. Several important and significant elements had to be present:

- **Patience over a period in excess of 20 yrs.**

- **A relentless search for a mutually acceptable identification of the public interest by all levels of concerned government.**

- **A truly interdisciplinary effort, wherein teams including biologists, hydraulic engineers and public administrators searched for restoration answers that all disciplines could live with, while maintaining the essential flood control features in urban and other economically essential areas; and**

- **Innovative scientific discovery and verification in the restoration of an almost totally destroyed ecosystem.**

In the end, each of these elements of the Kissimmee River restoration experience are part of a whole -- blending, supporting and contributing to the bigger story of the political science of accomplishing such a fundamental, vast and vital environmental restoration.

The Kissimmee River experience is not unlike that experienced on the Upper Mississippi River in achieving funding for the $200 million Environmental Management Program. This was another case where years of persistence, patience, creativity, and innovative science paid off.

These success stories should provide a spark to creative minds throughout the Mississippi River Basin - - "We can make a difference if we have the vision to dream the impossible, the creativity to suggest alternative management, and the guts to stick with our dreams when the heat is turned up".

Perhaps there is hope for rivers like the lower Missouri, so abused by man's futile attempts to control it over the last two hundred years!

Sources: EPA News-Notes, January - February 1992, #18, and Land Letter - A Newsletter for Natural Resource Professionals Vol. 11, No. 10 (April 1, 1992)

Mississippi River Corridor Study Underway

The Mississippi River National Heritage Corridor Study Commission Act of 1990 established a three-year Commission to study the resources of the Mississippi River Valley, and to make recommendations to Congress on the boundaries of a proposed Mississippi River National Heritage Corridor, stretching from its headwaters to the Gulf of Mexico.

To date the Commission, composed of governor appointed members from all ten Mississippi River states and representatives of five federal agencies, has approved a scope of study, reviewed a preliminary inventory of Mississippi River resources, and is gathering information critical to its recommendations for the future of the Mississippi River Valley as part of their Mississippi River Corridor Study.

The purpose of the Study is to evaluate the national significance of the River's natural, historic, cultural, recreational, economic, and landscape resources and to assess the feasibility of designating the River as a national heritage corridor. As a part of the study, the commission will assess state and local support for designation. In cooperation with state and local partners and the public, the Commission will develop a range of management options for the protection of the area's resources.

Congress will review the study and make a decision regarding designation. If Congress establishes a Mississippi River National Heritage Corridor, planning for the protection, enhancement, and management of the Corridor will proceed.

The Study will take 3 years to complete and will be done in 4 phases:

- Project Initiation - This phase, currently underway, consists of initial information gathering, initial public involvement, and other start-up activities.

- Feasibility Study - This phase consists of an inventory and analysis of natural and cultural resources, a study of the feasibility of corridor designation, development of alternative management strategies for resource protection, and a progress report to Congress.

- Draft Development - This phase consists of production of a draft study document and extensive public comment, including 10 public meetings.

- Final Study Document - This document will be finalized, taking into account public comments received during the process. The document will be sent to congress for its decision on designation as a national heritage corridor.

At present, the project has received only partial funding from Congress, and the Commission is seeking additional sources of support, including private funding options. A current request to Congress has been submitted for $500,000 in fiscal year 1993.

Designation of a Mississippi River National Heritage Corridor would elevate the River's importance on the National level, and hopefully, assist in obtaining funding to preserve, protect, and manage the Rivers natural resources, including its fishery.

Mississippi River Basin Alliance

A group of 45 persons representing various public, environmental, and social justice organizations from throughout the Mississippi River Basin came together in St. Louis in late February to explore ways that they as citizen's groups could work together to restore and maintain the environmental quality and protect the cultural, historic, and recreational value of the Mississippi River Basin.

The conference was the first time these groups had come together to work on Mississippi River issues. It was an opportunity to establish common issues of interest, identify possible strategies and goals, explore resources and means of cooperating both formally and informally, allow environmental and community leaders to get to know each other, and establish positive working relationships.

There was a consensus among the groups to support reauthorization of the Clean Water Act in 1992 with the Mississippi River Basin granted special designation as a "national treasure." The groups felt such a designation would help focus legislative awareness and, hopefully, funds for protection of its natural and cultural resources.

Specific issues that were identified as being of utmost concern to the participants were improvement and maintenance of healthful water quality, sustainability of agriculture, appropriate economic and cultural practices and traditions, habitat loss, improvement in our ability to acquire and disseminate relevant information, health concerns, and representation and community involvement by people affected by the environmental quality of the Mississippi River.

The group decided to name themselves **"The Mississippi River Basin Alliance"**. The Alliance is visualized as a loose network of groups who agree to work together on some or all of the issues of concern mentioned above.

Additional information on the Alliance can be obtained from Cliff Ochs (314) 776-7981.

Source: St. Louis Audubon Society Vol. 59, No. 2, April 1992.

Lower Mississippi River Coordination Group Forming

Representatives of State fish, game and environmental quality agencies from Arkansas, Louisiana, Mississippi, Missouri, Tennessee, and Texas met on April 21-22 with representatives from the National Marine Fisheries Service,

U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Soil Conservation Service, and the Gulf States Marine Fisheries Commission in Vicksburg, MS to discuss the formation of an interagency coordination group for the lower Mississippi River.

The group decided to form a group similar to the Upper Mississippi River Conservation Committee (UMRCC, Rock Island, IL), or the Missouri River Natural Resources Committee (MRNRC Pierre, SD), and that a Coordinator should be provided by the U.S. Fish and Wildlife Service similar to that currently provided for the UMRCC, MRNRC and MICRA.

The UMRCC, MRNRC, and Lower Mississippi River Group are envisioned as sub-basin coordination groups that MICRA will use to achieve basin-wide coordination. A similar group exists on the Ohio River, but does not currently have a Fish and Wildlife Service Coordinator.

Depending on MICRA's success and existing needs, similar groups may eventually be organized for other large sub-basin units such as the Arkansas-Red rivers or the Tennessee River System. MICRA is envisioned as an umbrella coordination group for all of these other sub-basin units, at least for fisheries issues.

Midwest Area Rivers Coalition Formed

River and agricultural interests on the Upper Mississippi River have formed a new coalition to lobby for navigation improvements on the Mississippi and Illinois River. The Midwest Area River Coalition (MARC 2000) was formed to lobby Congress to secure funding for navigation improvements on the two rivers. Navigation improvements on the Ohio River have benefitted for years by the action of DINAMO, a similar group that intensely lobbies for navigation system improvements on the Ohio River System.

MARC 2000 was established last fall in St. Louis and has just named its first Executive Director -- Mr. Christopher Brescia. Mr. Brescia was a Congressional staffer, lobbyist, and consultant in Washington, D.C. MARC 2000 will initially focus on Mississippi River Locks 19 through 25.

Source: The UMRCC Newsletter, Rock Island, IL, March/April 1992

EPA and USDA Sign Agreement to Attack Farm Pollution

The U.S. Environmental Protection Agency and the U.S. Department of Agriculture have signed a memorandum of agreement that aims to cut environmental harm to land and water stemming from pesticides, fertilizer and animal waste.

The agreement is said to be significant in that it brings together two agencies that haven't seen eye-to-eye in the past, in light of EPA's view that farming is the source of most of the pollution in the nation's lakes and rivers.

The agreement calls for a senior-level interagency task force to develop a detailed agricultural pollution prevention strategy by Oct. 1, with an emphasis on voluntary action and partnerships between the public and private sector. The agencies are in the midst of selecting task force members.

Four strategies were outlined in draft form that will be fleshed out in the next four months. The October draft is not expected to be significantly different but the time delay will give groups in the private sector a chance to comment on the proposal before full implementation.

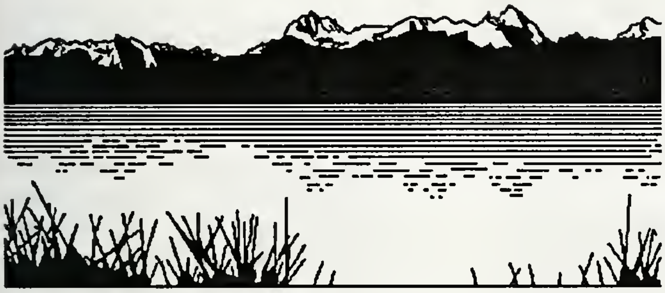
The basic goals of the strategy are:

- implementation of a nationwide program to minimize agriculturally-related pollution
- organization of a comprehensive marketing strategy designed to promote voluntary pollution prevention
- evolution of coordinated research, technology development, and technology transfer systems that will preserve the environment
- an overall strengthening of the relationship between the two federal agencies in hopes of moving forward in the area of agricultural pollution prevention

Source: Land Letter, Vol. 11, No. 16 (June 1, 1992)

Water Management Changing in the West

According to an article in the Wyoming Tribune-Eagle, Cheyenne (3-21-92) by Staff Writer Tom Zoellner the West is rapidly entering a new phase in its water management history - "a change that could be as significant as the closing the frontier a century ago."



The era of big federal dams is being replaced by environmentalism. The shift is one from development and allocation to re-allocation and conservation according to Mark Squillace, professor of water law at the University of Wyoming. The Clean Water Act of 1987 placed severe environmental restrictions on new water projects and few major dams have been built since.

The most famous case is when Denver lost its bid to build the Two Forks Dam on the South Platte because it would effect the natural habitat of the whooping cranes in the Nebraska Sand Hills.

The $70 million Sandstone Dam in Wyoming (on the drawing board for 4 years) recently appears dead after Wyoming was unable to account to the Corps of Engineers and EPA as to what all the stored water would be used for. According to Wyoming State Engineer Gordon Fassett, "This is part of the changing collective attitude toward the West. The water policy has gradually shifted from a goal of agriculture and population growth to an ongoing vision of environmental stewardship and planned management."

Mark Anderson, spokesman for the Bureau of Reclamation, said that there is more and more talk of a "changing mission" from building dams to maintaining them. "The philosophy now is that the Bureau should look at the projects in place and say: 'Okay, given that there is a finite supply of water, what can be done to spread that water around better?'"

Steven Gloss, Director of the Wyoming Water Research Center at the University of Wyoming, suggested that the most probable feature of the future of Western water will be a large-scale interstate "water market", where units of the precious stuff of life will be bought and sold like a commodity.

Gloss said water marketing has not yet caught on in Wyoming because the State's low population doesn't generate the demand necessary for a free market to function effectively.

In California, however, the State is coming close to setting up the nation's largest water market for farmers, who could sell their spare water to growing coastal cities.

In Colorado, a thriving water market has allowed cities like Denver to buy needed water from "all four corners of the State", according to Wyoming Assistant Attorney General Dennis Cook. Publications like *Water Strategist* and *Water Exchange Information Service* keep hydrobrokers advised of the most recent rates.

California has even suggested an "interstate water bank" to ease rising demand in Los Angeles and San Diego. This would allow downstream states to purchase rights to unused upstream water.

Source: Wyoming Tribune Eagle (3-21-92)

States Could Get Veto Power Over Dams

The House version (May 27) of the Energy Policy Bill gives the states the power to block hydropower projects that would damage wild and scenic rivers, parks and other protected areas. The provisions were added to the bill after Rep. John Dingell (D/MI), Chairman of the House Energy and Commerce Committee, lost 221 to 195 in his bid to have weaker language added.

Three other hydropower provisions that originally were approved by the Interior Committee also were added to the bill. The bill authorizes the Bureau of Land Management and Forest Service to issue rights-of-way for federally licensed hydropower or similar projects that cross public lands that they manage. As part of the license, the agencies could set conditions that the licensees would have to meet. The provision reverses a 9th U.S. Circuit Court of Appeals decision and proposal in the Bush Administration's national energy strategy that gave FERC sole authority over such right-of-way decisions.

The amendment also prohibits new dams if they are in national parks or would flood them. Existing dams could be relicensed only with approval of the interior secretary.

A fourth provision addresses Rep. Gejdenson's (D/CT) concern over FERC's recent licensing of a one megawatt dam at Yantic Falls, a park in Norwich, CT. The provision prevents FERC from granting private parties the right to condemn land in state parks. The House rejected proposals by Rep. Wayne Owens (D/UT) that would have created an environmental review process for granting rights-of-way across federal lands for oil and gas pipelines and that would have restricted the use of public land for storage of radioactive wastes or siting of electric generating facilities.

Don Clarke, a lawyer who represents

hydropower interests, said the provisions represent "poison bullets for new hydropower projects" by setting up a veto process that doesn't take energy implications into consideration. He said the industry would work with Dingell and the Senate to get the amendment weakened or killed in conference.

Source: Land Letter, Vol. 11, No. 16 (June 1, 1992)

Japan and China Still Building Dams

The Nagara River is Japan's last wild river. All of Japan's other 30,000 rivers have been tamed with dams, concrete walls, dikes and elaborate spillways. Ignoring outcries from environmentalists, citizens' groups, biologists, and fishing enthusiasts, the Construction Ministry has begun building a $1.1 billion estuary dam, that critics say is unnecessary.

Mitsuaki Mizuno, an official of a water resource agency affiliated with the Construction Ministry said, "It is just emotional sentimentalism to want a river to remain just as it is. Such thinking has no place in modern society." "!#%&#!"

Another Construction Ministry official is quoted as saying, "A river is there for humans to develop and make appropriate use of. That should be obvious to any sane person. We are concerned with the total environment for humans. And if the natural fish happen to die in the process, we possess the technology to supply new fish raised in captivity. So you see, there is really no problem." "!#%&#!"

To make its point, the government has plastered communities all along the Nagara with posters depicting smiling cartoon trout skipping nimbly up fish ladders. "You see how easy it is?" the captions read. "You see how happy we are to have the dam?" "!#%&#!"

The 30-year fight over the fate of the Nagara is Japan's longest-running and most emotional environmental controversy, pitting a poorly organized coalition of environmentalists, fishermen and citizens against the mammoth Construction Ministry, the country's top dispenser of pork-barrel projects.

In China, the Three Gorges Dam on the Yangtze River is seen by some as proof of China's renewed commitment to economic reforms.

Construction of the dam will create a 370-mile long reservoir, ruining a spectacularly dramatic stretch of the Yangtze River that is now one of China's major tourist attractions. More than 1 million people will have to be relocated.

The project has been under consideration for nearly a half-century, and it appeared to have been shelved in the 1988 National People's Congress session when deputies raised questions about its feasibility. After the Tiananmen Square incident, a crackdown on political dissent followed and criticism of the project was effectively shut off, while government spokesmen mounted an intense propaganda campaign for the dam.

The cost of the dam is now put at $11 billion, but it could run to three or four times that figure. Its future will depend on whether China can borrow money from sources outside of the country to support the project.

Despite our frustrations with development pressures here, we're still very lucky to be living in this country!

Source: Globe (4-15-92)

The HI-Z Turb'N Tag

RMC Environmental Services of Drumnore, PA has developed, and patented (No. 4,970,988), a fish recovery technique called the "HI-Z Turb'N Tag".

The tagging and recovery technique is described in the April 1992 issue of Hydro Review in an article entitled "Debunking the Myths about Fish Mortality At Hydro Plants" by Dilip Mathur and Paul G. Heisey.

The HI-Z Turb'N Tag is a tiny latex balloon that is attached to the fish and then injected with chemicals. After an observation time of less than one minute, during which researchers examine the condition and behavior of the fish, the tag is injected with activating fluid. The fish is then introduced into the penstock of an operating turbine through an induction apparatus. The chemical contents within the tag react and inflate the tag shortly after passage. The tag then "buoys" the fish to the surface in the tailrace.

A boat crew recovers the fish with a bucket, usually within minutes. Biologists can examine the fish and quantify the exact location, extent, and type of injury, predation, or mortality suffered. With the Turb'N Tag recovery technique, investigators generally recover more than 90 percent of the fish. After recovery, biologists place the fish in a holding tank on the boat, remove the tag(s), and examine the fish for injury/mortality and scale loss. Then, the recovered live fish are transported to an onshore tank or a floating net pen, and held for latent mortality assessment.

According the article, the technique's successful use at a variety of locations, and with different turbine types and species, attests to its reliability in assessing turbine-related mortality. Tests are described for American shad on the Susquehanna River (PA), Atlantic salmon on the Connecticut River (VT), herring and American shad on the Connecticut River (MA), channel catfish and bluegill on the French Broad River (NC), and smallmouth bass on the Hudson River (NY).

While the mechanics of conducting a turbine-related mortality study using the tag method are relatively straightforward, RMC has found it useful to establish the following criteria up front in their study plans so that no misunderstanding exists after the studies are concluded:

- collection and handling mortality less than 15%
- effects of tagging negligible, as evidenced by 24-hour survival of at least 90% of the fish● minimum detectable mortality of no less than 10%
- recovery rates at least 90% between test and control fish
- average recovery time of less than 10 minutes

They also recommend a pretest using 10-20 fish to assure that the pre-established criteria will be met. This pretest also provides an opportunity to rectify any unforeseen problems.

RMC biologists observed minimal adverse effects to the fish from tagging, such as abnormal behavior, hemorrhaging, or death. Nor did they observe any adverse effects to the fish in the laboratory during development of the tag technique, and none have been detected to date in field tests.

They suggest that a small, neutrally buoyant miniature radio tag that produces minimal drag may be used in combination with the Turb'N Tag at power stations with high volume discharges or large tailwaters. The radio tag, attached to one or a few fish, allows biologists to zero in on fish immediately after they pass through the turbines. The radio tag can be inserted into the fish's stomach or attached externally with a stainless steel pin.

Additional information can be obtained by contacting Dr. Mathur and Mr. Heisey at RMC Environmental Services, Inc., Utility Consulting Division, Muddy Run Ecological Laboratory, 1921 River Road, P.O. Box 10, Drumore, PA 17518 (717) 548-2121.

Standard Protocols for Monitoring and Sampling Zebra Mussels

This publication authored by J. Ellen Marsden describes techniques for effective and efficient sampling of zebra mussel veligers, settled juveniles, and adults. The rationale for zebra mussel monitoring and ideas for designing monitoring programs are discussed.

Copies can be ordered for $2.00 from: Distribution Center, Illinois Natural History Survey, Natural Resources Building, 607 E. Peabody Drive, Champaign, IL 61820, (217) 333-6821.

The Year of Clean Water

"The Year of Clean Water", sponsored by America's Clean Water Foundation, is almost half gone. The Foundation is involved in creating greater awareness of water quality issues leading up to reauthorization of the Clean Water Act, and is interested in promotions of improved water quality by public or private groups. They encourage broad use of their logo, and it will appear on nautical charts printed by the National Oceanic and Atmospheric Administration.

★ 1992 ★
THE YEAR OF
CLEAN WATER
Celebration & Commitment

For further information the Foundation can be contacted at 750 First Street, NE Suite 910, Washington, D.C. 20002.

New Outdoor Atlas to be Published

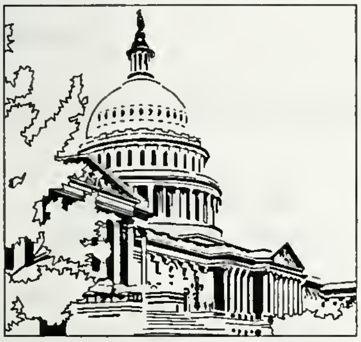
A state-by-state guide to 5,000 wildlife and outdoor recreation areas has been published by the Houghton Mifflin Company. The 192-page book by John Oliver Holmes includes information from six federal agencies, more than 160 state agencies, as well as wildlife organizations. Color-coded state maps and charts also detail federal and state parks, forests and wildlife areas as well as private preserves and sanctuaries. "The U.S. Outdoor Atlas & Recreation Guide" costs $16.95 and was to be published May 26.

TAKE A FRIEND FISHING.
NATIONAL FISHING WEEK
IT'S CATCHING.

CONGRESSIONAL ACTION ON BILLS PERTINENT TO THE MRDS*

Interjurisdictional Rivers

H.R. 4169 Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1992. Authorizes preparation of a national strategy for interjurisdictional rivers management, and tests the feasibility of the Mississippi Interstate Cooperative Resource Agreement. Sponsored by Gunderson (R/WI), as well as fifteen additional co-signers. Most likely will not be considered during this session of Congress



Clean Water Act

S. 1081 (Reauthorization bill). Still not scheduled for markup.

Endangered Species

H.R. 4045 (Reauthorization bill) - Introduced by Studds (D/MA) in November; no hearings scheduled yet. Bill may soon be introduced in Senate.

H.R. 5105. Introduced by Chandler (R/WA), streamlines exemption process, requires government officials to consider effect of recovery plans on local economies and helps compensate landowners for related losses.

Environmental Education

P.L. 102-259. President Bush signed into law, authorizing $40 million for Morris K. Udall Foundation and scholarships to fund students studying the environment.

Recreation

H.R. 5001. Introduced by Kostmayer (D/PA). Hearings held which authorizes a national assessment of rivers for recreation potential as well as fish and wildlife values, water quality and water supply possibilities.

Wild and Scenic Rivers

P.L. 102-271. President Bush signed into law, designating 85 miles of the Allegheny River (PA) as Wild and Scenic.

P.L. 102-275. President Bush signed into law designating 210 miles of eight Ouachita and Ozark national forest rivers as Wild and Scenic.

Wildlife Refuges

S. 2572. Authorizes several land exchanges in Arkansas and Idaho, one of which would add 56,000 acres owned by the Potlach Corp. to Arkansas' Cache River and White River national wildlife refuges in return for 18,500 acres of public land in Idaho.

H.R. 2881 and H.R. 3688. Would reform management of wildlife refuges. Hearing held May 6th by House Merchant Marine's fisheries panel.

* Source: Land Letter - Status Report (May 20,1992), Vol. 11, No.14

MEETING ANNOUNCEMENTS

UMRCC Mussel Symposium

A symposium entitled, "The Conservation and Management of Freshwater Mussels" is planned for October 12-14, 1992 at the Embassy Suites Hotel in St. Louis, Missouri. The symposium is being sponsored by the Upper Mississippi River Conservation Committee.

The symposium will focus on:

- *Regulations* - State, regional or system updates, management strategies for commercial and non-commercial spp., future trends and needs, sanctuaries, limitations on industry

- *Commercial Harvest* - Upper Mississippi River status, regional assessments of pressure, industry status, concerns and trends, international trade implications

- *Conservation* - culture, early life history, reintroduction, stocking, restoration, habitat requirements and management, habitat alteration, indices of populations, exotics update, endangered species recovery efforts, etc.

- *Sampling Methods and Data Management* - equipment and collection strategies, evaluation techniques, sampling designs, software applications

- *Environmental Awareness* - legislative needs, political processes, export taxes, resource rent, user fees

More information on the Symposium can be obtained from Kurt Welke, Wisconsin Department of Natural Resources (608) 326-0233 or Jon Duyvejonck, UMRCC Coordinator (309) 793-5800.

River Crossings

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Interjurisdictional Rivers Bill Update

H.R. 4169, cited as the **"Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1992."** is sponsored by Congressman Steve Gunderson (R/WI).

Since the last issue of "River Crossings", Colin Peterson (D/MN), Richard H. Baker (R/LA), Tim Johnson (D/SD), and Floyd Spence (R/SC) joined Wayne Owens (D/UT), Joe Kolter (D/PA), William J. Jefferson (D/LA), Chester G. Atkins (D/MA), William H. Natcher (D/KY), Jerry F. Costello (D/IL), Jerry Huckaby (D/LA), Arthur Ravenel, Jr. (R/SC), W.J. (Billy) Tauzin (D/LA), Doug Bereuter (R/NE), Carroll Hubbard, Jr. (D/KY), and Jim McCrery (R/LA) in signing on as co-sponsors. More co-sponsors are needed to advance the bill through the Merchant Marine and Fisheries Committee.

On May 20th Congressman Billy Tauzin (D/LA) assumed a leadership role in pursuit of this important legislation by writing to Gerry Studds, Chairman of the Fisheries and Wildlife Conservation and the Environment Subcommittee of the House Merchant Marine and Fisheries Committee asking that the Subcommittee schedule a hearing on H.R. 4169. This is considered an important action because Tauzin is a ranking majority member of the Merchant Marine and Fisheries Committee and his support will elevate the bill's priority.

Potential co-sponsors can be directed to contact Brad Cameron, Washington, D.C. (202) 225-5506.

Election of MICRA Officers

A mail ballot was circulated to all Steering Committee members in early June. Results of that election follow:

Vice Chairman: Jim Fry (MO)
Treasurer: Marion Conover (IA)

Policy Sub-Committee:
- Missouri River Member: Larry Peterman (MT)
- Lower Mississippi River Member: Wayne Pollock (TN)
- Entity Member: Gary Edwards (FWS)

Jim Fry will fill a one year term as Vice Chairman, and then replace Wes Sheets as MICRA Chairman on July 1, 1993. At that time another Vice Chairman will be elected.

Marion Conover will fill the position of MICRA Treasurer for an unspecified term. Marion has established an account for MICRA at a Des Moines, IA financial institution. All dues, donations, etc. can be directed either through the MICRA office or directly to Marion.

Policy Sub-Committee members will fill their positions for a period of two years. When Vice Chairman Fry assumes the Chairmanship he will also replace Wes Sheets as Policy Sub-Committee "Member at Large". The Upper Mississippi and Ohio River members will come up for re-election in 1993.

MICRA Priorities

The MICRA Activity Prioritization Report was printed in final form in early June. The report documents the prioritization process, responses of all Steering Committee members, and a prioritized listing of all MICRA goals, objectives, and tasks.

A limited number of copies are

available for free distribution through the MICRA office, 608 East Cherry, Columbia, MO 65203, (314) 876-1911.

MICRA Paddlefish/Sturgeon Committee Being Formed

MICRA's first standing technical committee is being formed to address basinwide concerns related to paddlefish and sturgeon. Candidates for the MICRA Paddlefish/Sturgeon Committee are currently being identified by Steering Committee members.

MICRA has been identified in a draft Fish and Wildlife Service document entitled, "Guidelines for the Management and Conservation of Paddlefish and Sturgeon Species in the United States", as the logical mid-continent coordination point for all paddlefish activities, and for sturgeon activities effecting those species which occur within the basin (i.e. lake sturgeon, shovelnose sturgeon, and pallid sturgeon). The "Guidelines" document is being developed for the Fish and Wildlife Service by an interagency Committee.

The MICRA Paddlefish/Sturgeon Committee will hold their first meeting in conjunction with the Annual Meeting of the American Fisheries Society in Rapid City, South Dakota in September. The Committee's first order of business will be to develop its own Mission Statement and operational procedures. The MICRA Paddlefish/Sturgeon Committee will not answer to any one State or Agency, but to the MICRA Steering Committee.

Membership of the Paddlefish/Sturgeon Committee currently includes the following persons: Steve Filipek (AR), Kim Graham (MO), Larry Hesse (NE), Veronica Pitman (TX), Bobby Reed (LA), Phil Stewart (MT), and Cliff Stone (SD).

Further information on membership to the Committee can be obtained from the MICRA Office, 608 East Cherry, Columbia, MO 65201, or by contacting your appropriate State or Entity Steering Committee member.

Plans to Stock Pallid Sturgeon

Jerry Hamilton and Kim Graham, Missouri Department of Conservation, were so successful in their pilot spawning efforts of pallid sturgeon that they are now facing the problem of what to do with the results.

During 1991 and early spring 1992 they obtained 10 mature pallid sturgeon; two from the Missouri River in Nebraska and eight from the Mississippi River below St. Louis. In spring 1992, two mature females from the Mississippi River were injected to induce spawning, eggs were collected by hand stripping and fertilized with milt from four males (two from the Missouri River in Nebraska and two from the lower Mississippi River) to maximize genetic diversity.

Their spawning success far exceeded expectations and they now have 22,000 sturgeon fingerlings (5+ inches total length) being fed artificial foods at the Blind Pony Hatchery near Sweet Springs, MO. Feeding costs will exceed $50,000 by early fall, and far more if the fish are held until next Spring. Based on current growth rates the fingerlings should be about 10-12

River Crossings

Published by

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MICRA Policy Committee
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Jim Fry, Missouri Department of Conservation, Jefferson City
Larry Peterman, Montana Department of Fish, Wildlife and Parks, Helena
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MICRA Coordinator/Executive Secretary and Newsletter Editor
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River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

inches long by fall 1992. Space in the hatchery raceways and available water may also become problems as the fish grow.

The problem of excess fish arose because the Pallid Sturgeon Recovery Team set a goal to produce fry to use for future broodstock, genetics evaluation, feeding trials, a development series, temperature trials, educational purposes, and for chemical bioassays. The Team assumed high mortality, but survival has been higher than expected.

Ten thousand pallids were appropriated for temperature trials and for bioassay work, but a facility has not been located to conduct this work.

The Recovery Team agreed early on not to stock pallid sturgeon raised at a hatchery until a genetic analysis of parental stock and of the wild populations is conducted to determine stocking locations and rates. Genetics information will likely not be available until late fall.

It appears that the numbers of pallid/shovelnose sturgeon hybrids in the lower Mississippi River may exceed those of "pure" pallid sturgeon. Commercial fishermen who provided the 10 broodstock pallid sturgeon to the Blind Pony Hatchery also provided about 25 additional sturgeon, all of which were apparent hybrids.

At the Pallid Sturgeon Recovery Team's request, Missouri has developed a stocking plan which includes two alternatives: (1) Stock all of the sturgeon currently on hand in the Mississippi River below St. Louis, (2) Stock half in the lower Mississippi river and half in Missouri Department of Conservation managed lakes.

In the first option fingerlings would be stocked at 15-20 sites in the Mississippi River between St. Louis and Caruthersville, Missouri (310 miles). Spreading the stockings over 300+ miles of river would reduce concerns about genetic swamping and likely increase post-stocking survival. This area is proposed because 32 of 35 pallid sturgeon hybrids captured in 1991 and 1992 came from here. Because few pallid sturgeon have been captured above St. Louis, it is likely that most will remain in the Mississippi River. Stocking would occur in early spring after preliminary genetics evaluations are completed.

Under the second option, about half of the sturgeon fingerlings would be stocked into state managed lakes this fall, and the remainder into the lower Mississippi River next spring. The fall stocking would eliminate concerns for hatchery space and water and reduce production costs by about $30,000. It would also reduce the chance of losing the fish to a disaster.

Under option two, Missouri recommends more specifically that the fall stockings occur in Thomas Hill Reservoir (4,800 acres) and Long Branch Reservoir (2,400 acres). Both reservoirs are in north central Missouri and have typical reservoir fish populations. Missouri feels that lake reared pallid sturgeon should be easier to sample to obtain information on growth, survival, and maturity. Additionally, they would provide an excellent source of known age fish for future research projects.

The fall stocking would be fish 10-12 inches in total length and by spring total length would exceed 12 inches. Based on Missouri success with stocking paddlefish and lake sturgeon, survival at these sizes should be good.

This is an interesting dilemma because no one wants to destroy the progeny of an endangered species, and yet no one wants to see a hatchery reared year class swamp the genes of the wild population either. In the meantime, the cost of maintaining the fish continues to grow.

For further information contact Mark Dryer, Chairman, Pallid Sturgeon Recovery Team, U.S. Fish & Wildlife Service, Bismarck, ND, (701) 250-4491.

Sturgeon Information Available

The following publications were recently received in the MICRA office:

Ruelle, R., and C. Henry. 1992. Organochlorine Compounds in Pallid Sturgeon. Contaminant Information Bulletin (June). U.S. Fish & Wildlife Service, South Dakota State Office, Pierre, SD. 7 pp.

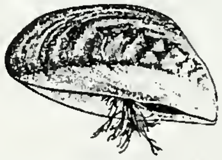
Henry, C. J., and R. Ruelle. 1992. A Study of Pallid Sturgeon and Shovelnose Sturgeon Reproduction. U.S. Fish & Wildlife Service, South Dakota State Office, Pierre, SD. 19 pp.

For additional information on these publications and to inquire about their availability contact: Dick Ruelle, U.S. Fish & Wildlife Service, South Dakota State Office, Pierre, SD 57501-5408. (605) 224-8693.

Zebra Mussel Reaches St. Paul, MN Via Barge

More than 100 mature zebra mussels were found in late June attached to the hull of a barge fleeted just downstream from St. Paul, MN. Minneapolis/St. Paul is the "Head of Navigation" on the Mississippi, so it seems a better than even bet that the entire Intercontinental Waterway System could already be infested with the pest; much sooner than earlier predicted.

The mussels were discovered on June 24th after a barge owned by Dakota Barge Service in Newport, MN was pulled from the Mississippi for cleaning and repairs. The mussels were attached to the barge by their byssal threads.



Zebra mussel showing byssal threads.

Byssal threads are long, sticky thread-like material that is secreted by the posterior part of the foot in many

mussel species. Most mussel species shed these threads within a few weeks, but the zebra mussel uses them very effectively throughout their adult life to firmly attach to any hard object, including other mussel shells.

In early July numerous zebra mussels were also found clinging to two navigation locks near Winona, MN. Divers could not see well in the murky water of the lock, but felt significant numbers could be located on the locks with a more thorough search.

It would seem that the baton is now passed to recreational boaters who will likely carry the pest further upstream and inland. Ecologically, this could spell disaster for our native mussels because of the zebra mussel's nasty habit of attaching itself to other mussel shells. Large numbers of zebra mussels attached to native mussel shells have been known to kill native mussels through suffocation.

The Impact of Zebra Mussels on Native Mussel Fauna

Recently a group Fish and Wildlife Service (FWS) research biologists, active in research programs on zebra mussels or native mussel species, were asked to provide their best scientific judgement as to how many native freshwater mussel species would become extinct in the next ten years.

The results are troubling even if the estimates are off by as much as 90%. At present, FWS biologists believe that 18 species of freshwater mussels of the family Unionidae are already extinct.

Even without the invasion of the zebra mussel, their best professional judgement is that an additional 45 species will probably become extinct in the next ten years because of water quality degradation, siltation, impoundments, navigation projects, and other habitat alterations.

When the impacts of the zebra mussel are considered, it is the opinion of FWS biologists that an additional 20 mussel species will become extinct within the next 10 years.

These estimates were made on the assumption that the zebra mussel will have its greatest impact in reservoirs and large rivers in the eastern United States. If the zebra mussel successfully invades mid-size or small rivers, many more mussel species will either be driven to extinction or at least extirpation in some rivers.

There are a total of 297 species of mussels native to the U.S. Within 10 short years, if these predictions hold up, 30% will be extinct! Species effected are listed in the chart on page 5.

Major Decline in Upper Mississippi River Fingernail Clams

Biologists at the National Fisheries Research Center in LaCrosse, WI analyzed temporal trends in fingernail clam populations for several Upper Mississippi River navigation pools to assess anecdotal observations of reduced abundance.

Historic data were obtained from several sources, including regional scientists, state and federal resource management agencies, primary literature, municipalities, utility companies, unpublished reports, and universities. These data were supplemented with additional sampling at selected river sites.

Sufficient historical data (1973-1990) were obtained for trend analyses (Mann-Kendall test) of fingernail clam abundances in eight navigation pools (2, 5, 5A, 6, 7, 8, 9, and 19). Additional data were obtained by resampling historical sites in pools 2, 5, 5A, 6, 7, 8, and 9.

Major declines were evident in pools 2, 5, 7, 8, and 19. Combined data from all eight pools also showed a significant decline in abundance. The decline was most pronounced in Pool 19, which had the longest historic record. Pool 19 densities averaged 30,000/m^2 in 1985, declining progressively to zero by 1990. Mean densities of fingernail clams for the seven pools sampled in 1991 remained low, ranging from 0 to 112/m^2.

Fingernail clam populations are sensitive to pollution, so they make good indicators of environmental conditions. These population declines may signal a large-scale deterioration in the health of this important riverine ecosystem.

Fingernail clams have historically provided an important food resource for diving ducks and channel catfish, especially in Pool 19.

Future research at the LaCrosse lab will attempt to identify causal factors contributing to these declines.

For further information contact: Teresa J. Naimo or Donna M. Wilson, National Fisheries Research Center, P.O. Box 818, LaCrosse, WI 54602-0818, (608) 783-6451.

Tribes Organize to Protect Missouri River Water Interests

Twenty-six Missouri River Indian tribes met in Lakewood, CO in June to discuss mutual interests in the Missouri River Basin. The meeting was sponsored by the Native American Fish & Wildlife Society (NAFWS) and the Bureau of Indian Affairs (BIA).

The tribes agreed that a coalition was needed to represent the diverse Tribal interests in the Basin, however, all did not agree on the means by which the goal (an organized effort) would be accomplished.

Six tribes in North and South Dakota currently have a coalition known as the MNI-SOSE Tribal Water Rights

Freshwater Mussels Which Are Or May Become Extinct in the Next Ten Years as a Result of Man-Induced Factors and the Invasion of the Zebra Mussel

Probably Extinct Freshwater Mussels of the Family Unionidae

Coosa elktoe (*Alasmidonta maccordi*) (AL)
Carolina elktoe (*Alasmidonta robusta*) (NC)
Ochlocknee arc-mussel (*Alasmidonta wrightiana*) (FL)
Sugarspoon (*Epioblasma arcaeformis*) (AL, KY, TN)
Angled riffleshell (*Epioblasma biemarginata*) (AL, KY, TN)
Leafshell (*Epioblasma flexuosa*) (AL, IL, IN, KY, OH, TN)
Yellow-blossom (*Epioblasma florentina florentina*) (AL, TN)*
Acornshell (*Epioblasma haysiana*) (AL, KY, TN, VA)
Narrow catspaw (*Epioblasma lenior*) (AL, TN, VA)
Forkshell (*Epioblasma lewisii*) (AL, TN, KY)
Round Combshell (*Epioblasma personata*) (AL, IL, IN, KY, OH, TN)
Tennessee riffleshell (*Epioblasma propinqua*) (AL, IL, IN, KY, OH, TN)
Wabash riffleshell (*Epioblasma sampsonii*) (IL, IN, OH)
Cumberland leafshell (*Epioblasma stewardsoni*) (AL, KY, TN)
Tubercled-blossom (*Epioblasma torulosa torulosa*) (IL, IN, KY, TN, WV)*
Turgid-blossom (*Epioblasma turgidula*) (AL, TN)*
Virginia pigtoe (*Lexingtonia subplana*) (VA)
Tombigbee moccasinshell (*Medionidus macglameriae*) (AL)

* Federally Listed Species

Freshwater Mussels Likely to go Extinct with Establishment of the Zebra Mussel

Ouachita rock-pocketbook (*Arkansia wheeleri*) (AR)*
Fanshell (*Cyprogenia stegaria*) (KY)*
Oyster mussel (*Epioblasma capsaeformis*) (KY, AL, TN, VA)
Cumberlandian combshell (*Epioblasma brevidens*) (KY, TN, VA)
No Common Name (*Epioblasma tortulosa rangiana*) (Great Lakes)
Fine-rayed pigtoe (*Fusconaia cuneolus*) (Upper TN River drainage)*
Cracking pearlymussel (*Hemistena lata*) (Upper TN River drainage)*
Pink mucket (*Lampsilis orbiculata*) (OH and TN River drainages)*
Birdwing pearlymussel (*Conradilla caelata*) (Upper TN River drainage)*
Fragile papershell (*Leptodea fragilis*) (MS River drainage; AL to TX; St. Lawrence River)
Hickorynut (*Obliquaria olivaria*) (MS River drainage; St. Lawrence River)
Orange-footed pimpleback (*Plethobasus cooperianus*) (IL, TN)*
Clubshell (*Pleurobema clava*) (Great Lakes)
Southern clubshell (*Pleurobema decisum*) (AL)
Rough pigtoe (*Pleurobema plenum*) (AL, TN, KY)*
Pink pigtoe (*Pleurobema rubrum*) (TN River drainage)
Fat pocketbook (*Potamilus capax*) (MS River and tributaries in MO and AR)*
Pink papershell (*Proptera ohiensis*) (Unknown)
Rabbitsfoot (*Quadrula cylindrica*) (Big river species)
Wartyback (*Quadrula nodulata*) (OH, Cumberland, and TN River, IA to LA)

* Federally Listed Species

Freshwater Mussels Likely to go Extinct Without Establishment of the Zebra Mussel

Carolina heelsplitter (*Lasmigona decorata*) (NC)
Highnut (*Pleurobema altum*) (AL, GA)
Hazel pigtoe (*Pleurobema avellanum*) (AL, GA)
Painted clubshell (*Pleurobema chattanoogaense*) (AL, GA)
Black clubshell (*Pleurobema curtum*) (Upper Tombigbee River in MS)*
Dark pigtoe (*Pleurobema furvum*) (AL)
Southern pigtoe (*Pleurobema georgianum*) (AL, GA)
Cumberland pigtoe (*Pleurobema hanleyanum*) (AL, GA)
Flat pigtoe (*Pleurobema marshalli*) (Gainesville, AL lock and dam)*
Georgia pigtoe (*Pleurobema murrayense*) (AL, GA)
Longnut (*Pleurobema nucleopsis*) (AL)
Ovate clubshell (*Pleurobema perovatum*) (Six streams in the Mobile Basin)
Warrior pigtoe (*Pleurobema rubellum*) (AL)
Heavy pigtoe (*Pleurobema taitianum*) (AL, MS)*
Alabama clubshell (*Pleurobema troschelianum*) (AL, GA)
True pigtoe (*Pleurobema verum*) (AL)
Triangular kidneyshell (*Ptychobranchus greeni*) (AL, GA)
Winged mapleleaf (*Quadrula fragosa*) (St. Croix River, MN)*
Cumberland monkeyface (*Quadrula intermedia*) (TN)*
Appalachian monkeyface (*Quadrula sparsa*) (TN, VA)*
Stirrupshell (*Quadrula stapes*) (Sipsey River, AL)*
Brother spike (*Elliptio fraterna*) (AL, GA, SC)
Winged spike (*Elliptio nigella*) (GA)
Tar spinymussel (*Elliptio steinstansana*) (NC)*
White wartyback (*Plethobasus cicatricosus*) (Tennessee River, TN)*
Lilliput (*Toxoplasma parva*) (MS River drainage, NY south to AR; FL)
Lined pocketbook (*Lampsilis binominata*) (AL, GA)
Haddleton lampmussel (*Lampsilis haddletoni*) (AL)
Speckled pocketbook (*Lampsilis streckeri*) (AR)*
Higgins' eye (*Lampsilis higginsi*) (Upper MS River drainage)*
Alabama lampshell (*Lampsilis virescens*) (AL, TN)*
Scaleshell (*Leptodea leptodon*) (Unknown)
Fat pocketbook (*Proptera capax*) (Lower OH River, St. Francis River, AR; eastern IA) *
Tan riffleshell (*Epioblasma florentina walkeri*) (TN, VA)*
Upland combshell (*Epioblasma metastriata*) (AL, GA, MS)
White catspaw (*Epioblasma obliquata perobliqua*) (Fish Creek, OH)*
Purple catspaw (*Epioblasma obliquata obliquata*) (Green and Cumberland rivers, OH)*
Green blossom (*Epioblasma torulosa gubernaculum*) (Clinch River, VA)*
No Common Name (*Epioblasma torulosa rangiana*) (Great Lakes tributaries)
Upland acornshell (*Epioblasma othcaloogensis*) (GA)
Southern combshell (*Epioblasma penita*) (Mobile Basin AL, GA, MS)*
Alabama pearlshell (*Margaritifera marriane*) (AL)
Coosa moccasinshell (*Medionidus parvulus*) (AL, GA)
Ring pink (*Obovaria retusa*) (KY, TN, WV)*
Dromedary (*Dromus dromas*) (TN, VA)*

* Federally Listed Species

Source: U.S. Fish & Wildlife Service, Region 8, Washington, D.C.

Coalition. An invitation was extended for the other tribes to join this group, but agreement could not be reached.

Instead an organized effort is now underway to develop a Constitution for a new water rights organization known as the Commission of Missouri River Basin Tribes (CMRBT). Purposes of the CMRBT (outlined in the Draft Constitution) would include the following:

- Provide a forum for Indian tribes, native producers, to realize areas of mutual concern and exchange ideas and information on matters relevant to the management of Indian water resources through unified input at the national level.

- Promote an environment of enabling federal and tribal policies which improve opportunities for management and increased productivity from Indian water resources through unified input at the national level.

- Gather and disseminate information concerning legislative and federal policies affecting Indian water interests.

- Advise and work with the Federal, state, local and tribal governments to develop the full potential benefits attainable to Indians from the management of their water resources.

- Encourage the training and development of Indian natives in the water resources professions and related areas of expertise, and use all possible resources available, including tribal community colleges.

- Insure that the Indian reserved water rights are discussed, advanced, claimed, promoted, defended, protected, developed, and used for the full use and benefit of our people, including the right to manage, plan, and market our water and any water related resources to the fullest extent and continued enhancement of tribal sovereignty.

- To receive membership fees as well as gifts or grants of money and property, in order to administer these solely for the water development of Missouri River Basin Indian Tribes, and to take the necessary and proper steps for the accomplishment of these purposes.

The Tribes make it clear in their Draft Constitution that ".....no substantial part of the activities of the CMRBT shall be carrying on propaganda, or otherwise attempting to influence legislation [except to the extent otherwise permitted under Section 501(h) of the Code]. The code refers to federal tax laws governing tax exempt organizations.

Within the next few weeks the Tribes will decide whether to join MNI-SOHE or to form the new CMRBT. We applaud the Missouri River Tribes efforts to organize and look forward to working with them in the future.

MICRA has been actively pursuing Tribal membership on our Steering Committee, as well as participation in all of our activities. So far, two of the Mississippi River Basin Tribes (The Chippewa Cree in Montana and the Chickasaw Nation in Oklahoma) have signed on to the MICRA Agreement.

All of the Tribes in the Basin receive this Newsletter, and our invitation remains open for them to join MICRA either independently or collectively through the proposed Missouri River organization or another such group.

Additional information on MICRA can be obtained from our office at 608 East Cherry, Columbia, MO 65201 or by calling (314) 876-1911.

River Protection and Water Use:

Setting the Conservation Agenda for the 90's

American Rivers, Inc., and The Wilderness Society recently released the subject report documenting a conference of the same name held in Denver, CO on Jun 20-23, 1991.

American Rivers

The report summarizes the ideas and recommendations described and debated at the conference by over 300 individuals from across the country, including leaders of federal and state governments, river recreationists, hydropower developers, farmers, ecologists, and others.

The purpose of the conference was to help define a new national policy for river protection and water in the 1990's. Cosponsors included the National Park Service, U.S. Fish & Wildlife Service, U.S. Bureau of Land Management, U.S. Forest Service, American Whitewater Affiliation, Appalachian Mountain Club, Atlantic Salmon Federation, The Beldon Fund, Colorado Environmental Coalition, Greater Yellowstone Coalition, Idaho Rivers United, Northwest Rivers Council, Oregon Rivers Council, River Network, and Trust for Public Land.

Major points made by the report include the following:

- The Wild and Scenic Rivers System should be recognized as the cornerstone of Federal river protection policy and programs.

- Active public participation is the key to the long-term success of Wild and Scenic river studies and designations, and, indeed, to all river

conservation initiatives.

- A wide range of federal actions should be initiated to compliment the Wild and Scenic Rivers Systems.

- States provide a vital link between Federal and local action; state action is critical to successful conservation of the nation's rivers.

- Increased emphasis at all levels of government on water conservation is critical to the protection and restoration of rivers, particularly in the Western United States.

- New and stronger efforts are needed to achieve the nation's goal of eliminating pollution, and achieving fishable and swimmable waters across the country.

- The operations of all existing dams should be improved to meet today's environmental standards, and some dams in the United States are so environmentally destructive that they should be removed altogether.

- The public as well as federal and state resource agencies need to seize the opportunity to improve river resources provided through hydropower relicensing, while at the same time continuing to block new dam construction on outstanding free-flowing rivers.

- Numerous political and legal restraints need to be eliminated to achieve effective protection of instream flows.

- Greater emphasis on the successful creation and effective administration of state instream flow laws and federal reserved water rights will be needed to preserve and restore rivers.

- The Endangered Species Act is forcing river managers to develop new river management approaches to protect and restore threatened and endangered species.

- New mechanisms and institutions need to be created to facilitate the transfer of water from wasteful, low value uses to more valuable uses.

- Effective river protection and restoration requires attention to the entire river ecosystem, from the headwaters downstream, and should include the riparian zone.

- There is a growing national movement of local river activists working to restore severely degraded river ecosystems.

- Improved management by public agencies and communication among user groups are necessary to reconcile increasing conflicts among recreational users of river resources.

- River "greenways" are providing a new focus for river protection and restoration efforts at the local level.

Additional information or inquiries as to availability of this publication should be directed to: American Rivers, Inc., 801 Pennsylvania Avenue, SE, Washington, D.C. 20003 or The Wilderness Society, 900 17th Street, NW, Washington, D.C. 20006.

River Network

River Network is a national non-profit organization committed to building local support for river protection. River Network believes that people save rivers, that local people are the voice of America's rivers, and that local action is essential for effective, permanent river protection.

RIVER
NETWORK

Their stated mission is to empower the American public to protect and restore our nation's rivers. River Network has the following three programs:

- River Clearinghouse provides grassroots river guardians with information and referrals on technical and organizational issues.

- River Leadership Project recruits and supports state and local leaders in river protection.

- Riverlands Conservancy protects threatened riverlands by transferring them into public ownership.

Services offered to grassroots river conservationists by River Network includes the following:

- DORIS (the Directory of River Information Specialists): This directory is described elsewhere in this Newsletter.

- Networking: A national database of over 1,500 grassroots groups working on river protection is used to put individuals and organizations in touch with others who have successfully dealt with similar issues.

- River Voices: A quarterly publication used to facilitate communication among grassroots river groups and provide information on current issues in river protection.

- Case Studies: "Success Stories" of river conservation projects are circulated to interested individuals and groups to prevent re-inventing the wheel.

- Special Publications: Self-help booklets are published for river activists. "River Wealth" provides ideas on fund-raising. "River Wise" does the same for public education. "Choosing C(3) or C(4)" helps organizations select their tax-exempt status.

- Fund Raising Assistance - Advice, leads, and references on how to raise funds are provided.

- Action Planning Workshops:

Workshops are sponsored to help river guardians plan their campaigns.

For additional information contact: River Network, P.O. Box 8787, Portland, OR 97207. (503) 241-3506 or (800) 423-6747

Need Help Saving A River?

The threats, issues, interest groups, and regulations effecting rivers are numerous and complex. Consequently, the river conservation movement needs informed, energized local river advocates supported by experienced river specialists.

That's why River Network created the "Directory of River Information Specialists" (DORIS). DORIS is a free service that can be used to gain access to volunteer specialists with expertise on the issues of river protection.

DORIS
Directory of River Information Specialists

DORIS is a computer database with access to over 500 river specialists within conservation organizations, professional societies, state and federal agencies, and a national network of grassroots river guardians.

DORIS specialists have expertise in everything from hydropower to streamside development and pollution. They also have a desire to share their expertise with local river advocates.

To learn more about DORIS contact: River Network, P.O. Box 8787, Portland, OR 97207, (503) 241-3506 or (800) 423-6747.

Resource Abuse Movement?

According to a recent article in "River Voices", a quarterly publication of River Network, environmental protection advocates across the country are increasingly running up against organized, vocal opposition. Many of these anti-environmental efforts are part of a larger national effort that deceptively calls itself the "wise use" movement.

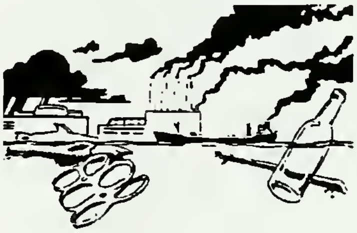
According to River Network, the Wise Use Movement is a national agglomeration of over 250 groups sharing an underlying philosophy: "Weaken environmental protection to permit unrestricted access to all natural resources for economic use, benefit and profit". The River Voices article says that throughout the country, the "wise use advocates are working on unraveling environmental protection on a variety of issues; mineral and energy extraction in wilderness areas and national parks, logging in ancient forests, Endangered Species Act reauthorization, wetlands protection, private property rights protection, and several other issues.

The "River Voices" article says that Wise Use Movement groups claim to be "grassroots" and "of the people for the people", but many are funded by major corporation and extractive industry interests. The article says that resource abuse groups with local emphasis also have misleading names that include the words "friends", "conservation", "conservancy", and the like, mimicking names of environmental organizations.

According to River Network, strategists from the resource abuse movement are copying the environmental movement's technique of grassroots organizing, except they have access to self-interested corporate money and do not suffer from being restricted to charitable activities.

The article says that a major reason for the successes of the resource abuse movement is their ability to capture media attention by formulating exaggerated and false statements about the impacts of resource protection measures. They appeal to the fears of local citizens, and those fears make it into headlines which gain considerable public attention, building political clout.

According to the "River Voices" article, river protection is viewed as a threat by resource abuse interests, but rather than confront the real issues directly, they hire groups like the "National Inholders Association" or "People for the West", who send in an organizer to terrify people about land condemnation. The article says that there's a gap between the real issues (resource protection versus exploitation) and pseudo-issues (land condemnation and federal control).



Rivers Voices cites the following as examples:

- Pemigewasset River (NH): An effort to protect the River through state and federal Wild & Scenic designation has met strong

opposition. According to River Voices, distortion and intimidation were techniques used by the primary opposition, a group called the New Hampshire Landowners Alliance (associated with the national Alliance for America). The State program was falsely condemned as a confiscation of private property despite the fact that the program governs instream issues, and local zoning and land-use regulations were not overridden. The State legislative proponents were labeled "ecoterrorists", and although the bill passed last year, it included some major concessions related to hydropower. Now the Pemi National Wild & Scenic River campaign is also facing serious opposition. The National Park Service is the lead agency in the study process, and opponents have incited landowners by telling them that the Park Service is involved with the intent to create a new national park accompanied by significant private land condemnation.

- Washington National Wild and Scenic Rivers Campaign: Sparked by the 1988 Oregon Omnibus Wild & Scenic Rivers Act (which designated 40 of that State's rivers into the national system), a group calling itself the "Washington Rivers Coalition" with the motto "Keeping Our Rivers Ours" is working hard to see that the State of Washington does not develop similar legislation. According to "River Voices", the group is largely funded by timber interests, who have brought in a man named Chuck Cushman (National Inholders Association) to organize opposition against any wild and scenic river legislation. Local opposition is riled up and a steady flow of mail keeps coming into the offices of the Washington Congressional delegation. The "Coalition" also lobbies hard each year to oppose the inclusion of any new rivers into the State rivers program, claiming State designation is a precursor to national designation.

- Niobrara River (NE): According to "River Voices", local resource abuse interests, presumably water development interests, also brought in Chuck Cushman as an outside organizer to direct their resistance to designation of the Niobrara as part of the National Wild & Scenic Rivers Program. This was at least the third time (according to the "River Voices" article) that Cushman had been imported to the region for similar activities. His previous work had focused on defeating two efforts to establish national parks in prairie habitat. The article says that because of their previous experience with Cushman and his tactics, local grassroots responded aggressively to his arrival, successfully getting the media to focus on him and his tactics rather than on what he falsely claimed the designation would do to local residents. Through the media, they spotlighted Cushman, exposing his past practices, picking apart his published statements, aggressively countering his claims, and revealing his funding sources.

Whether or not (as River Voices says) there really is a national network of groups out there whose main interest is resource abuse remains uncertain. What is certain is that as we continue to deplete our natural resources, more and more resource management issues are and will be impacting the interests of developers.

That being the case, we shouldn't be surprised if such an organization does or will soon exist. Our only defense is to be prepared by acknowledging its possible existence, do our homework, keep the best interest of the resource in the forefront of all of our actions, and work toward win-win solutions wherever possible.

The National Park Service Nurtures Local Greenways

The Rivers, Trails and Conservation Assistance (RTCA) Program of the National Park Service assists communities in developing greenways and protecting open space.

Through the RTCA Program the Park Service staff assists nonprofits and state and local government with greenway planning. They help bring people together to identify the natural areas, historical sites and recreational resources which give identity to their community, and then support local efforts to obtain the tools and means to protect and enhance those asses.

Some of their successes include:

- A restoration plan for 25 miles of Santa Rosa Creek in California which won a $100,000 state grant and a land contribution from a developer for a streamside trail system. The plan also calls for preservation of headwater natural areas as well as restoration of the creek's urban, channelized lower stretch.

- RTCA staff is helping create a 300-mile trail and enhancement plan for the Yampa Valley in Colorado. To date, cooperators, including the State, have pledged $2.65 million to plan and implement the project. Neighboring communities are planning their own trails to connect with those in the Yampa Valley.

RTCA services include the following:

- Advice and assistance to State and local government or nonprofits.

- One-time consultations and workshops up to 1-2 year collaborations.

- Projects must promise significant, tangible, cost-effective results.

For more information contact your regional National Park Service office or Charlie Stockman with the Park Service in Washington, D.C. (202) 343-3780.

Source: Common Ground, Vol. 3, No. 4, May/June 1992.

National River Systems Recreation Assessment

Peter Kostmayer (D/PA), Wayne Owens (D/UT), and Sam Gejdenson (D/CT) have introduced H.R. 5001 to amend the Outdoor Recreation Act of 1963 by authorizing the National Park Service and U.S. Geological Survey to conduct a national river systems recreation assessment.

Under the Act a "State of the Nation's River Systems" report would be prepared. It would include an assessment of the status and trends of the Nation's river resources and their associated riparian resources.

The report would be prepared by an independent panel of experts in the fields of biology, zoology, ecology, and related fields using existing data and information relating to the chemical, physical, and biological elements and processes of river resources and their associated riparian resources.

Contracts or other agreements would be used to form partnerships with and provide funding to the States for report preparation.

The Report would include:

- An evaluation of the existing status and historic and projected future trends on a national and regional level related to the riverine resource characteristics.

- A list of river systems and river reaches in the Nation for each ecoregion (as defined by the Secretary), the riverine resources characteristics of which have the highest natural qualities with particular emphasis on free-flowing river systems.

- A list of river systems and river reaches in the Nation for each ecoregion the riverine resource characteristics of which are degraded, but for which restoration is a feasible goal.

The report would be distributed to the heads of affected Federal departments, agencies, and instrumentalities; the States, including all State river management agencies; and to the public. The report would be utilized to improve the management of riparian areas under their respective jurisdictions.

A standard methodology, describing resource definitions, data collection, methods, and other items needed for a comprehensive information system relating to river and riparian zone resources would be developed.

A central repository for information assembled in accordance with the methodology and relating to river and riparian zone resources would be created.

The information system would include:

- A geographic identification of river systems and their associated riparian areas at a level of detail necessary to reflect the complete functioning of river systems.

- A cartographic system able to sort information by State, river basin, ecoregion (as defined by the Secretary), resource type, and other useful categories.

- A geographic identification, to the extent possible from existing information, of resource characteristics presently and historically associated with each river system, including, but not limited to (1) recreational uses, (2) economic use of river and riparian area resources, (3) social uses of river and riparian area resources, (4) institutional constraints on resource use, (5) condition of the biotic communities of both riverine and riparian zones, (6) functional integrity of the stream as a whole, (7) basin and drainage characteristics, (8) food (energy) sources available to the biotic community, (9) water quality, (10) habitat structure, and (11) flow regime.

The Secretary of the Interior would maintain the information system, periodically update it, and make it available to the public, State, local, and Federal agencies in such manner and form as will promote education, scientific inquiry, and sound agency decision making regarding river and riparian area resources.

The Bill authorizes $650,000 to prepare the initial report. Copies of the Bill are available from the sponsors.

West Coast Dams Could Come Down

Senate Bill S. 2527, introduced by Senator Brock Adams (D/WA) could

result in removal of two dams blocking salmon movement in the Elwha River.

Called the Elwha River Ecosystem and Fisheries Restoration Act, the bill would transfer ownership of two dams (Lower Elwha and Glines Canyon dams) from the James River Corporation to the federal government, which would lead the way for possible dismantlement.

The legislation is an attempt to restore salmon populations damaged by the two hydroelectric dams, while dealing with the competing interests (i.e. timber companies, environmentalists, fishermen, paper mills, Indians, city officials, park administrators, and economic development specialists.

According to Al Swift (D/WA) the parties have an incentive to compromise because without legislation, the courts will decide these issues and those decisions are likely to leave everyone dissatisfied. Swift believes the court battles would be more expensive, the concerns of individual groups would be ignored, and the ultimate losers would be the very fish the bill is trying to protect.

Opponents to the Bill are concerned that the taxpayer will end up subsidizing the dismantling of the dams as well as the construction of a water treatment plant needed to preserve the quality of the Elwha River.

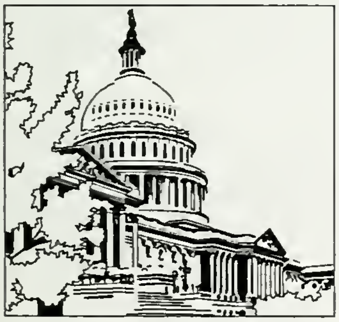
There is also a petition being filed by American Rivers before the Federal Energy and Regulatory Commission to remove the Enloe Dam on the Similkameen River and the Conduit Dam on the White Salmon River, both are tributaries to the Columbia River. In both cases, there has been no salmon passage at these dams since the early 1900's. Upstream spawning habitat remains relatively pristine.

Sources: Land Letter, Vol 11, No. 18, June 20, 1992; American Rivers, Summer 1992 Newsletter.

CONGRESSIONAL ACTION ON BILLS PERTINENT TO THE MRDS*

Interjurisdictional Rivers

H.R. 4169 Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1992. Authorizes preparation of a national strategy for interjurisdictional rivers management, and tests the feasibility of the Mississippi Interstate Cooperative Resource Agreement. Sponsored by Gunderson (R/WI), as well as fifteen additional co-signers. Most likely will not be considered during this session of Congress



Hydropower

H.R. 3002. Introduced by Unsoeld (D/WS). Clarification of FERC "fishway" definition to include both upstream and downstream passage. Awaiting subcommittee action in the House; no action in the Senate. Substance of Unsoeld bill included in National Energy Strategy bill.

National Energy Strategy Bill. H.R. 776 (Dingel, D/MI) and S.2166 (Johnston, D/LA; Wallop, R/WY). Passed Senate; awaiting reconciliation of differences between House and Senate bills.

Federal Power Act amendments to give states primary authority to impose condition on FERC-licensed hydropower projects. H.R. 649 (Stallings, D/ID), S. 106 (Craig, R/ID). Hearings held in the House, awaiting subcommittee markup; hearing held in Senate, awaiting full committee markup; in House and Senate.

Reaffirmation of state authority to impose environmental conditions on FERC-licensed hydropower projects. H.R. 3977 (Kostmayer, D/PA), S. 812 (Jeffords, R/VT). Awaiting subcommittee action in House; awaiting subcommittee action in Senate.

Water Quality

Clean Water Act Reauthorization. S. 1081 (Baucus, D/MT). Subcommittee hearings held in Senate, awaiting full committee markup; oversight hearings held in House.

Recreation

H.R. 5001. Introduced by Kostmayer (D/PA). Hearings held which authorizes a national assessment of rivers for recreation potential as well as fish and wildlife values, water quality and water supply possibilities. Awaiting markup.

Agriculture

S 2780 passed by Senate aims to boost enrollment of grass filter strips in conservation reserve program by removing an Agriculture Department easement requirement. H.R. 5402 (Penny, D/MN) is similar bill in the House.

Biodiveristy

House Agriculture forests panel held hearing June 16 on **H.R. 1969**, which aims to promote forest biodiversity. H.R. 5389 (Scheuer, D/NY) establishes a biodiversity research center.

Wild and Scenic Rivers

Hearings held on June 30th on **H.R.** 5021 (Rahall,D/WV), which calls for study of a 17-mile stretch of New River in Summers county, WV, for possible designation as a wild and scenic river.

* Source: Land Letter - Status Report (May 20,1992), Vol. 11, No.14; American Rivers Summer 1992 Newsletter.

MEETING ANNOUNCEMENTS

International Association of Fish and Wildlife Agencies

The Annual Meeting of the International Association of Fish and Wildlife Agencies will be held at the Marriot Hotel in Toledo, OH on September 11-16.

American Fisheries Society

The Annual Meeting of the American Fisheries Society will be held at the Rushmore Plaza Civic Center in Rapid City, South Dakota on September 14-17, 1992.

River Restoration Symposium

Larry Hesse, Nebraska Game & Parks Commission has organized a major two-day symposium entitled, "Restoration Planning for the rivers of the Mississippi River Ecosystem". It will be held in conjunction with the Annual Meeting of the American Fisheries Society on September 14th and 16th.

Larry has organized the symposium to help stimulate communication between fisheries researchers and managers basinwide. The objectives of the symposium are:

- To organize a description of existing information on the geology, hydrology, morphology, native fish species, introduced fish species, standard methods used in survey fisheries, human impacts on the physical system, and the values associated with the riverine resource.

- To define existing or planned management that might be useful for fisheries management in other rivers within the basin.

- To identify minimal requirements for the restoration of important fish stocks and other aquatic resources.

Papers will be presented on the Upper Mississippi, Minnesota, Atchafalaya, Ohio, Wisconsin, Yazoo, Yellowstone, White (AR), Vermillion, Illinois, Arkansas, Big Muddy, Big Black, Clinch, Embarras, Platte, Missouri, James, Kansas, Kanawha, Pigeon, Cheyenne, Grand, Moreau, Bad, White (SD), Powder, Sabine, Little Wabash, St. Croix, and Kankakee.

Paddlefish/Sturgeon Symposium

A Paddlefish Sturgeon Symposium, entitled, "The Prehistoric Survivors: Paddlefish and Sturgeon Management and Culture" will be held on September 16th in conjunction with the Annual Meeting of the American Fisheries Society in Rapid City, SD.

MICRA Paddlefish/Sturgeon Committee Organizational Meeting

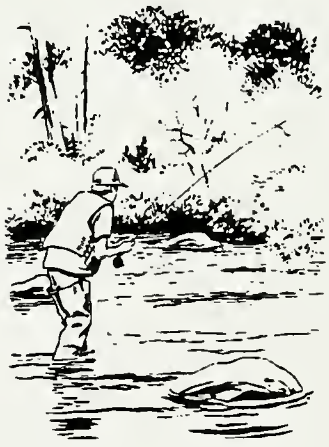
The Organizational Meeting for MICRA's Paddlefish/Sturgeon Committee will be held in conjunction with the Annual Meeting of the American Fisheries Society in Rapid City, SD.

UMRCC Mussel Symposium

A symposium entitled, "The Conservation and Management of Freshwater Mussels" is planned for October 12-14, 1992 at the Embassy Suites Hotel in St. Louis, Missouri.

The symposium is being sponsored by the Upper Mississippi River Conservation Committee. It will focus on regulations, commercial harvest, conservation, sampling methods and data management, environmental awareness.

Contact: Kurt Welke, Wisconsin Department of Natural Resources, Prairie du Chien (608) 326-0233 or Jon Duyvejonck, Upper Mississippi River Conservation Committee, Rock Island, IL (309) 793-5800



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Mississippi Interstate Cooperative Resource Agreement
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MICRA Newsletter Questionnaire

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Additional Comments:

River Crossings

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Interjurisdictional Rivers Bill Update

Congress ended their 1992 session without taking further action on **H.R. 4169**, cited as the "**Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1992.**" The Bill was introduced by Congressman Steve Gunderson (R/WI).

No new sponsors were signed on since the July-August "River Crossings" update. Congress will not return to session now until after the first of the year, so the earliest the Bill could be considered now is February.

For those unfamiliar with the Bill, it would provide test funding ($2 million annually) for MICRA for a 3 year period.

The bill will have to be reintroduced for the next Session and will need the renewed support of constituents and co-signers. This will require a concerted effort on the part of all MICRA members and supporters.

Parties interested in reintroducing and/or co-sponsoring a new bill should contact Congressman Steve Gunderson's Chief of Staff, Brad Cameron, Washington, D.C. (202) 225-5506.

MICRA Funding

The U.S. Fish and Wildlife Service has supported MICRA for about a year and a half now through funding of the Coordinator's salary, expenses and office space. In 1991 this was thanks to Gary Edwards, Deputy Director for Fisheries in the Service's Washington Office, and in 1992 thanks go to John Christian, Assistant Regional Director (Region 3), and Hannibal Bolton, Deputy Assistant Regional Director (Region 3).

Through establishment of a Treasurer's position and a MICRA account we now have a mechanism in place to receive and use funding from various other sources. Marion Conover, Chief of Fisheries for the Iowa Department of Natural Resources has assumed the role of Treasurer and has established a bank account for MICRA in the Des Moines, Iowa area.

We received our first funding from the States in the form of $1,500 in dues from the State of Illinois. Thanks for the initiative on this go to Mike Conlin, Chief of Fisheries for the Illinois Department of Conservation. Thanks also go to the Tennessee Valley Authority and Herb Jones for providing a $5,000 cash contribution to MICRA.

MICRA Paddlefish/Sturgeon Committee Meets in Rapid City

MICRA's first standing technical committee has been formed to address basinwide concerns related to paddlefish and sturgeon.

Kim Graham, Missouri Department of Conservation, was elected by the membership to serve as their first Chairman. Other members include Steve Filipek (AR), Larry Hesse (NE), Veronica Pitman (TX), Bobby Reed (LA), Phil Stewart (MT), Cliff Stone (SD), Tom Mosher (KS), and Tom Gengerke (IA).

The Committee will operate under consensus whenever possible, but will revert to majority voting procedures when necessary. In the latter case, provisions were made for statement of minority opinion.

The Committee will develop a planning document early-on to guide their activities. However, before such a plan could be considered the Committee faced their first action item. This was prompted by a request from Mark Dryer, Leader of the Pallid Sturgeon Recovery Team. Dryer asked that MICRA consider and make recommendations on various stocking options for release of pallid sturgeon fingerlings produced this year under the Recovery Team's experimental pallid sturgeon spawning efforts.

These efforts were headed by Jerry Hamilton and Kim Graham, Missouri Department of Conservation, who successfully produced some 22,000 pallid sturgeon fingerlings (5+ inches long) at the Blind Pony Hatchery near Sweet Springs, MO. This number was reduced to about 10,000 when the fish were transferred to outside rearing ponds where bird predation became a factor.

Based on current growth rates these fingerlings should be about 10-12 inches long by November 1992, when plans are tentatively being made for their release to the wild. Before this release is made, however, genetics evaluations will be completed to make sure that they are, indeed, purebred pallid sturgeon and not a pallid/shovelnose sturgeon hybrid.

Apparently, a significant amount of hybridization is occurring in wild stocks of the Middle and Lower Mississippi River, and there is some concern that some of the adults spawned could be hybrids. Externally, the hybrid is difficult to tell from the real thing.

The Pallid Sturgeon Recovery Team agreed early on not to stock hatchery reared pallid sturgeon until genetic analyses of parental stock and of the wild populations was completed. These results are expected in October or early November. Genetic Analyses, Inc. of Smithville, TX is conducting the evaluations.

Mark Dryer, Recovery Team Leader requested that Missouri develop a stocking plan for the fish. Kim Graham responded with two different proposals: (1) Stock all of the sturgeon currently on hand in the Mississippi River below St. Louis, (2) Stock half in the lower Mississippi River and half in Missouri Department of Conservation managed lakes. These were described in greater detail in the July-August issue of "River Crossings".

After considering the two options the MICRA Paddlefish/Sturgeon Committee developed and recommended a third option. Genetics evaluation would still be required under the MICRA option. However, only fifty to two-hundred pallid sturgeon would be stocked into 2-3 small reservoirs in order to maintain a captive stock. Receiving reservoirs would support as high a benthos population as possible, with little opportunity for the fish to escape during high water. These fish would provide a source of known-age pallid sturgeon, if needed, for use in scientific studies at some future date or as a source for aquariums or other needs. All remaining fish would be released into the lower 100 miles of the Missouri River and the 200 mile Mississippi River reach bordering Missouri (St. Louis to Caruthersville).

River Crossings

Published by

Mississippi Interstate Cooperative Resource Agreement (MICRA)
608 East Cherry
Columbia, MO 65201

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Jim Fry, Missouri Department of Conservation, Jefferson City
Larry Peterman, Montana Department of Fish, Wildlife and Parks, Helena
Frank Jernejcic, West Virginia Department of Natural Resources, Fairmont
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Marion Conover, Iowa Department of Natural Resources, Des Moines

MICRA Coordinator/Executive Secretary and Newsletter Editor
Jerry L. Rasmussen, U.S. Fish & Wildlife Service, Columbia, Missouri

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River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

The entire length of the receiving reach would be 400 miles. If possible, all released fish would be tagged with a coded wire tag. If that is not possible, 10% would be tagged with a PIT tag, and all fish would be tagged externally. Follow-up monitoring would be provided by Missouri, Illinois, and Fish and Wildlife Service biologists.

Committee members nearly reached consensus on this recommendation, but Nebraska abstained from the vote. Larry Hesse (Nebraska) argued against any stocking of pallid sturgeon at this time. He said that "genetic swamping" is a real concern, and that the use of hatcheries to recover the species is the wrong way to go. The only real answer he said is through habitat improvement. He said we need to adopt planning that goes at the root cause of our problem. However, he does support Missouri's efforts to raise the fish because he says that gives us the opportunity to use the technique when needed.

By stocking these fish he said we are introducing weaker fish that haven't been subjected to natural selection, and that these weaker fish will be more likely to reach spawning age and actually spawn than they would have had they been left to the elements at a younger age. He said that hatchery reared fish are basically "unfit", and he would like to see the States back off on paddlefish stocking for the same reasons. He said that by stocking we are missing the opportunity to put the heat on development agencies to do the habitat work needed to protect these species.

The Committee's recommendation was forwarded to the Steering Committee and it's Policy Review Sub-Committee for further evaluation.

Additional information can be obtained from the MICRA Office or by contacting Kim Graham, Missouri Department of Conservation, Columbia, MO 65201, (314) 882-9880.

Habitat and System Function Restoration vs Stocking

Larry Hesse, Nebraska Game and Parks Commission biologist, developed a position statement entitled, "Habitat and System Function Restoration" for consideration by the Paddlefish/ Sturgeon Committee at their September Organizational meeting to support his arguments against stocking hatchery reared pallid sturgeon at this time.

This position statement forms the basis for his concerns regarding stocking vs habitat restoration, and we thought it worth printing, in part, (both paraphrased and quoted) for this edition of "River Crossings".

Hesse reports that for 30 years his State has conducted studies all along Nebraska's 383 mile reach of the Missouri River, and has documented wild breeding populations of paddlefish, shovelnose sturgeon, blue sucker, flathead chub, and many other species throughout these reaches. Both large and old pallid sturgeon, as well as small (25 inches eye to fork length, weighing 3.9 lbs.) individuals have been collected. He reports that he has also successfully documented larval paddlefish, sturgeon, and blue sucker among many other species.

He has acquired a significant amount of information regarding physical conditions within the river during spawning periods, as well as at all times of the year. He says he has clearly demonstrated relationships between the density of life stages for native fishes and the operation of the river hydrograph as it is managed by the Corps of Engineers throughout the Nebraska reach.

Plans which he is recommending for the Nebraska reach "...call for habitat, water management, sediment, temperature, and migration pattern restoration." Hesse says, "I do not support the use of hatchery fish, at this time, to restore native stocks, even though I have been involved with such stockings in the past. Recently reported evidence clearly demonstrates the concern associated with stocking hatchery fish into wild populations...". To support his position, Hesse cites examples involving stocking in the Great Lakes and salmon stocking efforts in the northwest.

Concerns raised in his statement include competition for food and other resources between wild and artificial fish, predation of artificial fish on wild fish, and genetic dilution of wild stocks. Of most concern, however, is that hatcheries and artificial production provide an excuse for habitat loss and poor fisheries management.

He says that "...the community of users come to believe that hatcheries can solve our serious fisheries problems, and are swayed from helping achieve habitat restoration, which takes political will."

"While we wait for hatchery stocks to restore wild stocks, habitat restoration is either put on hold, or scaled way back. But the history of hatchery stocking success clearly shows that in most cases we await only failure."

Hesse says his research shows that artificially stocked walleye, northern pike and blue catfish fry experience very high mortality rates in the wild. But, "If fish are held, at much greater expense, to nearly a year of age, the early life natural culling process is lost entirely and fish are stocked with a much higher rate of survival. These 'genetically unfit' hatchery products will mate with and eventually dilute the wild genetics which evolved under

the intensity of natural selection."

Hesse's position statement promotes the "First, do no harm" rule. That is, "Introductions should not be undertaken unless there is adequate assurance that wild stocks of fish and other species will not be harmed."

Hesse says that we do not have enough factual information to assure the "First do no harm" rule at this time. He feels "... we should adopt a strong recommendation to restore riverine habitat diversity, riverine hydrographs, sediment equilibria, organic matter supplies and transport, natural water temperature regimes, and fish bypass at dams. No more hatchery stockings should be made into wild riverine fish stocks until our committee takes the necessary time to develop the appropriate rationale for when hatchery fish can be used safely".

In the short term, Hesse would "... support the use of hatchery paddlefish and sturgeon only in portions of their range where they have been extirpated and there is small likelihood of escapement as adults. Should these fish develop natural reproduction capability, their progeny will undergo natural selection pressures and are thus less likely to deteriorate wild populations should they drift as larvae into open riverine reaches."

Paddlefish/Sturgeon Committee Chairman, Kim Graham asked Jeff Koppelman, Missouri Department of Conservation geneticist to evaluate Hesse's concerns. In a memo to Graham, Koppelman agrees with Hesse in denouncing hatchery fish, but he does not consider the pallid sturgeon produced by Missouri this year as hatchery fish. He says, "...they are wild fish."

Koppelman says that "wild" fish are "hatchery" fish only, "...when the adults have been selectively bred (for some characteristic), or they have been in a hatchery for more than one year and have been spawned two consecutive years, or if their offspring are used as brood stock. I do not consider the two females and four males bred this year to be hatchery fish. But I will if they are bred next year."

He says Hesse's concerns that stocking will harm the recipient population can be alleviated by using "...as many adults as possible and you return the young to the same area. Next year, spawn a different brood stock and likewise return the young."

Koppelman says that natural selection in a hatchery can influence the genome of recipient populations, but he does "...not see the threat upon the native population to be as likely to occur..." as Hesse does. Koppelman says that, "Even if the young were maladapted because they were sheltered from natural selection during the most vulnerable stages of their life history, and they interbred with the native population...", there would be little effect, "...because the young from such crosses would now be selected against, if what they were sheltered from in the hatchery was selection for or against inherited characteristics. I emphasize the random aspect of survival because at this stage in pallid sturgeon evolution, I think that the remaining gene pool is so highly adapted that the selectional pressures on inherited characteristics causing pallid sturgeon problems, including diminished reproductive success, and survival of any zygote is likely more influenced by chance than some super set of adapted gene complexes."

Koppelman agrees with Hesse "...that environmental degradation and mitigation via hatchery fish are the real problems...I do not think that restoration is likely to occur by stocking; stocking fish obviously is only a means to an end, a means that is not likely to succeed because it is not alleviating the problem."

Koppelman does not see any logical reason why the pallid sturgeon being raised by Missouri should not be stocked. "In this case, stock the fish since we have them and the stocking will not violate the 'no harm' rule."

The Paddlefish/Sturgeon Committee will obviously want to address the need for habitat restoration for this, and other large riverine species. Most biologists would likely agree that habitat restoration is the key to the future of these species. The Committee currently has no plans to support any future releases of pallid sturgeon.

Comments on this issue can be directed to the Coordinator or to Kim Graham, Chairman of MICRA's Paddlefish/ Sturgeon Committee, 1110 S. College Avenue, Columbia, MO 65201 (314) 882-9880.

"Wild Fish"

The Oregon office of the Wilderness Society recently began publishing a bi-monthly newsletter called "Wild Fish". Its purpose is to provide up-to-date information about the status of the wild fish at risk in Idaho, Oregon, Washington, and California.

According to the Society's Quarterly Magazine (Fall 1992), "The newsletter is important for those interested in the fate of once-abundant fish populations and their habitat, which are now in serious trouble. The far-reaching and diverse consequences of the depleted fish populations include the probable extinction of a number of fish stocks, the destruction of gene pools, the erosion of tribal societies that have relied on wild fish for thousands of years, and the loss of jobs and income

in local communities."

The newsletter reports on the latest activities of individuals, organizations, and state and federal agencies and legislatures that are involved in fish-related issues.

Anyone interested in being added to the mailing list should contact Deanne Kloepfer or Valerie Kitchen, The Wilderness Society, 610 SW Alder, Suite 915, Portland, OR 97205-3610; (503) 248-0452.

Pallid Sturgeon Recovery Plan Available

The Draft Pallid Sturgeon Recovery Plan has been circulated for public review and comment. All comments should be received by the Recovery Team by October 27th.

A total of 21 pallid sturgeon were reported captured by fishermen and fishery field crews between April 15 and August 15, 1992.

For more details or to obtain a copy of the plan contact Mark Dryer, Recovery Team Leader (701) 250-4491.

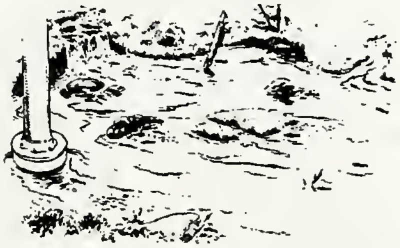
Aquatic Habitat Classification

Habitat Classification is an issue which the Upper Mississippi River Conservation Committee and many other river biologists have wrestled with for many years. A good, mutually agreed to habitat classification scheme is essential in describing the river, in communications; in documenting change over time; and more recently, in adapting riverine biology to the techniques of remote sensing and Geographic Information Systems (GIS).

Development of an aquatic habitat classification scheme was one of the first tasks addressed by the Long Term Resource Monitoring Program (LTRMP) for the Upper Mississippi River System for inventory, monitoring, impact assessment, research, and management purposes.

Within the floodplain of the Upper Mississippi River System aquatic areas can be defined that correspond to geomorphic and constructed features of that system. The hierarchical habitat classification scheme proposed by the LTRMP is displayed in Table 1.

Classified aquatic areas are useful as strata for randomized sampling of aquatic organisms. Mapping units of aquatic areas can be delineated that remain spatially fixed (until river and floodplain geometry changes). These aquatic areas cannot be considered specific habitat types, however, because they contain a wide range of dynamic conditions within each category and mapping unit.



Habitat conditions in running water, a second level descriptor, can be defined using water temperature, dissolved gases, dissolved solids, suspended solids, current velocity, turbulence, depth, substrate, and habitat types within the aquatic areas. Categories proposed by the LTRMP are displayed in Table 2.

Aquatic habitat in the Upper Mississippi River is a dynamic mosaic of habitat types. The extent and spatial distribution of specific habitat types vary greatly with river discharge. For example, aquatic habitat with a depth of 1 to 2 m, sand substrate, and current velocity of 0 to 0.3 m/sec is quite extensive at lower levels of river discharge in channels of the river. This specific habitat type, selected by many lotic fish species, becomes restricted in areal extent at higher river discharges.

Table 1. A proposed aquatic habitat classification scheme for the Upper Mississippi River System.

Aquatic Areas

Channel

- *Main Channel*
  - Navigation channel
  - Channel border
    - Natural bank steep
    - Natural bank gradual
    - Revetted bank
    - Wing dam
    - Closing dam
  - Sandbar
  - Tailwater
- *Secondary channel*
  - Navigation channel
  - Channel border
    - Natural bank steep
    - Natural bank gradual
    - Revetted bank
    - Wing dam
    - Closing dam
  - Sandbar
- *Tertiary channel*
- *Tributary channel*
- *Excavated channel*

Backwater

- *Contiguous*
  - Floodplain lakes
    - Abandoned channel lakes
    - Tributary delta lakes
    - Lateral levee lakes
    - Scour channel lakes
    - Floodplain depression lakes
    - Borrow pit lakes
    - Other artificial lakes
  - Floodplain shallow aquatic
  - Impounded
- *Isolated*
  - Floodplain lakes
    - Abandoned channel lakes
    - Tributary delta lakes
    - Lateral levee lakes
    - Scour channel lakes
    - Floodplain depression lakes
    - Borrow pit lakes
    - Other artificial lakes
  - Floodplain shallow aquatic

Table 2. Habitat conditions used for defining specific aquatic habitat types within aquatic areas.

- *Depth*
- *Current*
  - *Velocity*
  - *Turbulence*
- *Temperature*
- *Dissolved oxygen concentration*
- *Suspended solids concentration*
- *Light*
- *Substrate*
  - *Rock*
  - *Gravel*
  - *Sand*
  - *Silt/clay*
    - *Consolidated*
      - *(low water content)*
    - *Unconsolidated*
      - *(high water content)*
  - *Organic*
    - *Coarse refractory*
    - *Fine detrital*
  - *Cover*
    - *Submersed aquatic vegetation*
    - *Emergent aquatic vegetation*
    - *Floating aquatic vegetation*
    - *Flooded terrestrial vegetation*
      - *Grasses/sedges*
      - *Brush*
      - *Forest*
    - *Overhanging trees*
    - *Woody debris*
    - *Overhanging bank*
    - *Rock*
    - *Built structures*

Maps of the spatial distribution of habitat conditions can be used to assess availability and suitability of habitat for aquatic organisms. For large rivers with dynamic habitat conditions, this effort requires use of a computer-assisted GIS, remote sensing, advanced surveying, and hydraulic modeling technologies. All these techniques are being used by the LTRMP.

Further information on the LTRMP habitat classification scheme can be obtained by contacting Dr. Ken Lubinski or Dan Wilcox, Environmental Management Technical Center, U.S. Fish & Wildlife Service, 575 Lester Avenue, Onalaska, WI 54650, (608) 783-7550. Comments and criticism are welcome.

Information on remote sensing and GIS applications for evaluation of riverine habitats and fisheries can be obtained from Mark Laustrup, also at the Environmental Management Technical Center, (608) 783-7550.

We at MICRA would like to hear from you on the applicability of the LTRMP classification scheme to other rivers, and if you have a different classification scheme you're using for your river we'd like to see a copy. Please send these and any comments you may have to the MICRA Coordinator's office, 608 E. Cherry, Columbia, MO 65203.

Standardization of riverine habitat classification is something MICRA will undoubtedly want to address in the coming months.

The Corps of Engineers' New Environmental Ethic

Colonel Gaylerd E. Davis, Deputy Commander of the Missouri River Corps of Engineers Division in Omaha presented a talk on this subject on behalf of Lieutenant General Arthur E. Williams, Chief of Engineers at the recent River Restoration Symposium held in conjunction with the Annual meeting of the American Fisheries Society in Rapid City, SD.

Colonel Davis summarized the Corps' role over the years as "putting its many skills to work in meeting the needs of our country." In the early 19th century he said the Corps was, "...actively engaged in nation building thru exploration and surveying in the west; road, railway and lighthouse construction. On the rivers we were removing logs and bars to maintain navigation."

He said that over the years the Corps' mission has changed, "...to provide the engineering expertise necessary to meet the needs of a rapidly changing society."

"In the period between the mid '30's and the mid '60's the Corps met the needs of the nation by building flood control, water supply, and hydropower projects; and improving navigation and harbors. Unfortunately during this period the environmental impacts of this work was not a dominate issue."

But that has changed he said, "As a result of this new public environmental awakening the Corps has now embraced a **New Environmental Ethic.**" He said the Corps is actively meeting with environmental groups and working toward "sustainable development".

"Sustainable development", he says, "means growth that meets present economic needs without compromising our natural resources or the ability of future generations to meet their needs."

"To translate the new environmental ethic into practice", he says, "The Corps has adopted a **New Environmental Strategy** to elevate the importance of the environment."

He said, "The environment is no longer simply 'a consideration' in planning our new projects; it is now a 'go/no go' test. Any proposed new development or action will be judged by what we call the **Three E's**; Engineering, Economics, and Environment. Environmental considerations now stand--shoulder to shoulder--equal partners--with engineering and economics."

"New developments or actions, he said, attempt first, to avoid adverse impacts. If these are not avoidable, every effort is then made to minimize them and finally any unavoidable adverse impacts are fully mitigated. This guidance of **'Avoidance First'**..., applies not only to the way we plan federal water resources projects, but also to the way we evaluate permit applications under the Section 404 regulatory program."

"The President and Congress", he said, "have established environmental protection as one of the **Primary Missions** for the Corps of Engineers Civil Works Program. This adds for us a **Legislative Mandate**, along with our ethical mandate, to make environmental protection/restoration an integral part of our support to the nation."

Colonel Davis cited several directives of the Water Resource Development Acts which gives the Corps direction in the water resources area. These include:

- Benefit-cost analyses count the value of environmental benefits, which are usually intangible, at least equal to cost.

- Mitigation plans are required as part of each project proposal, and mitigation must take place before or during construction.

- The Corps is authorized to retrofit environmental improvements at its existing projects, especially those built before the "Environmental ERA".

- The Corps is directed to develop in consultation with the EPA, the Fish and Wildlife Service, and others a wetlands action plan to meet the national goal of "no net loss" of wetlands and to increase the long term quality and quantity of the nations's wetlands.

- The Corps is authorized to do "environmental dredging" for removal of contaminated sediments even if not within an authorized navigation channel normally dredged.

Colonel Davis cited the Corps' efforts on: (1) the Upper Mississippi River Environmental Management Program, (2) review of the Missouri River master manual, and (3) the Missouri River mitigation project as recent Corp's environmental successes in the Mississippi River Basin.

In closing, Colonel Davis said, "All of us share a common obligation of educating the public about the importance of environmental sustainable development for our nation's economic and social viability. Among other considerations, we must help citizens understand that we've entered a new global era...one in which respect for the environment. ..sustainable growth...is not only possible, but also critical for our survival."

Colonel Davis quoted Henry Ford, a quote which we can all put to good use in MICRA as well as in our daily lives, "Coming together is a beginning, keeping together is progress, working together is success."

Let's hope the Corps (all the way up and down the line) is and will remain committed to the new environmental ethic. If they are we applaud them, and we welcome the new era!

U.S. Natural Resources Account

According to Jay D. Hair, President of the National Wildlife Federation and columnist with the Newspaper Enterprise Association, natural resources may soon be dealt with as part of the nation's capital assets, similar to the Gross National Product (GNP).

Hair says that Carol Carson, Director of the U.S. Bureau of Economic Analysis has plans to release the first natural resource account produced in the United States. It will be directly linked to GNP, but will be prepared as a separate, "satellite account" for fossil fuel resources. By the following year, a forest resources account is to be prepared.

Hair says, "This is a modest but necessary beginning. Understanding the real state of our economy requires that we account for the value of natural resources." We couldn't agree more!

Reenactment of the Lewis and Clark Journey Ends

The two men Tom Warren, Tulsa chiropractor, and John Hilton, a Flat River, MO college administrator, finished their reenactment of Lewis and Clark's journey on August 13th at a press conference in Portland, OR.

An Associated Press article (Kansas City Star) said the men found the nation's river system in far worse shape than they expected when they set out on the 4,000 mile journey.

"We came into this with our eyes open, but we did not know the scope," Warren said. "The rivers remind me of an epitaph on a tombstone", Hilton said. "It said, I told you I was sick."

The men said they found the rivers drowned by dams, dried up by irrigation and fouled by agricultural and industrial pollution.

They set out on their journey at St. Louis on June 1.

Hurricane Andrew Fish Kill

According to an article in "The Aquaculture News" (September 1992), millions of dead fish turned up following Hurricane Andrew and more kills were expected.

Low oxygen levels were blamed for the deaths of millions of fish in the Atchafalaya Basin and other inland waterways.

The kills were reported in saltwater and freshwater areas in south central Louisiana. At least 7 million fish died in a saltwater kill that occurred right after Andrew went ashore.

The hardest hit freshwater area appears to be in the Atchafalaya Basin. Kills were also reported in Lake Verret, near Manchac, and on Bayou Laforche.

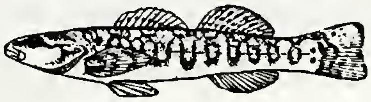
The storm churned up bottom sediments that consumed oxygen and blew leaves and other vegetation into the water which also consumed oxygen as they deteriorated, making the situation worse.

More kills were expected.

Niangua Darter Update

Population surveys at 34 sites on 19 streams have been completed by the Missouri Department of Conservation in the last 12 months. Fewer darters occupying fewer miles of stream indicate that something must be done soon.

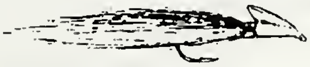
The Department of Conservation is educating landowners about ways to maintain healthy streams and is cooperating with the U.S. Army Corps of Engineers and county commissioners to improve gravel removal practices and minimize other instream disturbances where darters live. They are also working with private landowners to improve stream habitat and establish forested buffer strips along Ozark streams. The Department is conducting this through their "Streams for the Future" program and, in part, through a U.S. Fish & Wildlife Service grant.



The Streams for the Future program involves technical assistance with cost sharing. A landowner can apply for reimbursement for one or more eligible practices and is provided technical assistance on the stream improvement project.

Eligible practices include riparian tree and shrub planting, livestock exclusion, natural riparian revegetation, streambank revegetation, tree revetments, riffle structures, anchored rootwad fish habitat structures, and riprap.

Source: Conservation Program Progress, Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65102.



National Fish and Wildlife Refuge, National Fish Refuge, or National Fish Management Unit?

Region 3 of the U.S. Fish and Wildlife Service is in the very early stages of developing proposals for establishing National Fish & Wildlife Refuges on the Middle Mississippi (between St. Louis and the mouth of the Ohio River), and the Lower Missouri River (downstream from Sioux City, IA to the mouth at St. Louis).

The primary purpose of these refuges would be to stem the tide of declining habitat quality for large riverine fish species. In other words, action would be taken to better manage or gain management control of the remaining side channel and backwater habitat and to re-establish these habitats in areas where they formerly existed.

These refuges would be established over a long period of time through long-term leases and/or by obtaining land in fee title from willing sellers.

However, questions have been raised by some State fish managers who are concerned over the likelihood that, if these refuges are managed under the Fish and Wildlife Service's traditional refuge management program, they would ultimately end up being managed for waterfowl instead of fisheries, and that they would likely be closed to fishing.

Traditional waterfowl management in riverine wetlands has isolated many of these refuge areas from the river, eliminating free fish movement to and from traditional spawning areas, and has

established water level management regimes which do not coincide with the needs of riverine fish species.

To guard against this possibility, some fishery biologists have suggested that instead of naming the new refuges "National Fish and Wildlife Refuges" that it would be better to name them "National Fish Refuges", or better yet under a new term which would more likely guarantee their availability to fishing for non-threatened species. Some have suggested calling them "National Fishery Management Units".

We'd like to know what others in the Basin think. We know of National Fish Refuges in the West where the desert pupfish is protected, and we know of the Upper Mississippi River Wildlife and Fish Refuge where waterfowl is the target of management. In the case of the Upper Mississippi, fish have taken the back seat in refuge management, and have often been negatively impacted by waterfowl management projects even though a major impetus for establishing this refuge was for protecting fish spawning grounds.

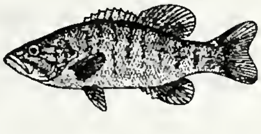
Please forward any insights, ideas, or views you may have on this subject to the MICRA Coordinator's Office, 608 East Cherry, Columbia, MO 65203.

Arkansas Focusing on Streams and Rivers

After years of primarily concentrating on reservoirs, the Arkansas Game and Fish Commission has begun re-emphasizing the conservation and management of its valuable stream systems in its overall agency direction. Competing uses and development of these lotic systems and their riparian corridors have been manifested in a new state water plan where instream flow needs for fish and wildlife have often taken a back seat to agriculture and industry. To address these issues, new ways of looking at fisheries instream flow reservation and basic aquatic surveying techniques have been developed.

A comprehensive stream survey system has been developed cooperatively by Arkansas and the U.S. Forest Service fisheries and hydrology personnel. Similar data are collected (biological, chemical, and physical) that answer the needs of both agencies and are incorporated into a data base. This system is called Basin Area Sampling System (BASS) and has been used on both headwaters and lower reaches of streams.

Using BASS, stream surveys are now being conducted in each of Arkansas' 11 fisheries districts by district management and research personnel. These survey/ studies include: a tailwater trout habitat evaluation in the Beaver Lake tailwater; a restrictive size and creel limit (14-in and two fish/day) on a quality northern Arkansas smallmouth stream (Crooked Creek); evaluation of longnose darter habitat and populations in northern and western Arkansas and sampling of possible candidate introduction streams; an evaluation of three dams on a Ouachita Mountain smallmouth bass stream; an environmental project below a Corps of Engineers' reservoir, cooperatively funded by the Corps' and the State; a basin-wide look at what can be done to improve a heavily impacted stream by a multi-disciplinary team from several states, federal, and university groups (Lower Ouachita River Work Group); an aerial survey to identify potential lands for CRP enrollment on a low-gradient bottomland hardwood delta stream; and a continuing evaluation of the commercial and sport fishery values of one of the last major unregulated streams in the State, the Saline River.



In addition, to help maintain the riparian areas along Arkansas' streams and to provide angler and sportsman access, Arkansas has one of the most extensive systems of access in the nation (122 areas). Many of these areas are traditional boat ramps and parking areas, but there are also stream frontage and walk-in areas on several streams.

With over 10,000 miles of fishable streams, Arkansas has its work cut out trying to manage a diversity of stream resources ranging from hydropower trout streams to low gradient delta rivers. Arkansas is committed, however, to a long-term monitoring and management program that will protect an enviable and invaluable resource -- our streams.

More information on Arkansas' program can be obtained from: Steve Filipek, Fisheries Research Biologist, Arkansas Game and Fish Commission, #2 Natural Resources Drive, Little Rock, AR 72205, (801) 223-6300.

Source: SFI Bulletin No. 437, August 1992, and American Fisheries Society, Fisheries Management Section Newsletter Vol. 12, No. 1 (Spring 1992).

Innovative Partnership Protects Beaver-Created Wetlands

The U.S. Fish & Wildlife Service, the Maine Department of Inland Fisheries and Wildlife, and private landowners

have launched a program designed to combat flooding caused by "nuisance" beaver dams, while protecting valuable beaver-created wetlands. The partnership is funded by the North American Waterfowl Management Plan.

Beavers have built many of their dams in Maine in highway culverts, causing rising water levels that often flood public roadways. The highway department has responded by trapping and relocating beaver and destroying the dams in order to lower water levels.

An alternative being used by the partnership involves a combination of PVC drainage pipes, turkey wire, and metal stakes. Biologists from the Maine Fisheries Department and the Fish and Wildlife Service are installing beaver exclosures around culverts. The beaver rebuild dams against the exclosures, but water levels can be controlled by the PVC pipes.

Since the partnership began in the spring, exclosures have been installed at eight sites, with successful results. A special example is found in central Maine where less than $100 worth of hardware was installed to protect a 400-acre beaver-created wetland!

Private landowners are pleased, beaver ponds are not drained, the highway department rests easier knowing roads will not be flooded, and resource managers are pleased.

More than 500 acres of beaver-created wetlands have been protected to date.

Source: Fish and Wildlife News, U.S. Fish & Wildlife Service, Summer, 1992

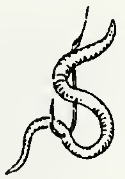
(Ron Joseph, Fish and Wildlife Enhancement, Maine Field Office)

Ozark Hellbender Concerns

Ozark Hellbenders are members of the giant salamander family. Although dwarfed by their Asiatic relatives that grow up to 5 ft. long, they are huge by North American standards. Missouri has produced specimens up to 2 ft. long and the Allegheny Mountain region has produced specimens measuring 29.6 in.

Their skin is a dark, mottled gray to brown and has pronounced folds along the sides of the body. Their tails are flattened and rudder-like. Once you've seen one you will never forget it, but the problem is that not many are being seen, and the species has become a candidate for federal listing.

Hellbenders live under flat rocks in swift, clear streams. Their diet of crayfish, minnows and other small animals sometimes gets them in trouble, because they are prone to nibbling at earthworms or other bait at the end of angler's lines. Although hellbenders are harmless, Dennis Figg, Missouri Department of Conservation Endangered Species Coordinator, says that their appearance is so strange and unappetizing that some anglers kill them in disgust.



Recent declines in Arkansas have raised concern for the species, and a survey is presently being conducted in Missouri. Figg says, "We haven't taken a survey in 15 years, but we do know that the species has practically disappeared from Arkansas waters."

Figg says his office is very interested in hearing from people who encounter hellbenders. "We're especially asking cold-water giggers to keep their eyes open", he said.

Figg can be contacted at the Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65102, (314)751-4115.

Zebra Mussel Update

Zebra mussels are rapidly spreading throughout the major waterways of Mississippi River Basin. They have recently been documented at several locations on the Ohio River; and at Greenville, MS, Minneapolis, and several navigation locks on the Mississippi. Of most concern to biologists is the fact that Mississippi River clammers are reporting numerous instances of zebra mussels attached to native mussel fauna at several locations.

Recent collections made by U.S. Fish & Wildlife Service biologists at Greenville, MS have all been microscopic larval forms of the mussel. Biologists are hoping that warmer temperatures in the southern U.S. may limit the mussel's spread in that area.

There is also some speculation that fast flowing river habitats may be unfavorable to zebra mussel colonies. Robert McMahon, University of Texas, reports in his book "Ecology and Classification of North American Freshwater Invertebrates" that compared to native mussels, the zebra mussel's planktonic veligers are poorly suited to high-flow, fast moving rivers. So unless there is regular introduction of veligers from upstream locations, colonies may tend to diminish. The presence of upstream impoundments seem to play a key role in keeping populations high in European rivers.

A new book on zebra mussels by research biologists Tom Nalepa of the National Oceanic & Atmospheric Administration Great Lakes Laboratory and Don Schloesser of the Fish & Wildlife Service National Fisheries Research Center-Great Lakes is due in November. The book entitled "Zebra Mussels: Biology,

Impacts and Control" will be published by Lewis Publishers, Inc., 2000 Corporate Blvd. N.W., Boca Raton, FL 33431. Cost will be $69.95.

One of the problems in monitoring the spread of zebra mussels has been the inability to identify the veligers in the water column before they settle on a substrate. The Wisconsin Sea Grant Institute reports that examination of water samples with a binocular microscope with polarized filters makes the veligers "glow brightly against a dark background." This is particularly useful in samples with a lot of organic debris such as algae. Further information on this technique can be obtained from the University of Wisconsin-Green Bay Sea Grant Zebra Mussel Watch (414) 465-2795.

Source: U.S. Fish & Wildlife Service and UMRCC Newsletter July/August 1992.

Hydropower Concerns

It appears that a FERC decision on granting a license for the LeClaire, IA (Upper Mississippi River Lock and Dam 14) hydropower project will be made soon. The LeClaire project is being watched by many hydropower interests as an indication of how future projects will fare, and how recommendations to protect riverine fish movements will stand up in the licensing process.

FERC recently indicated that the project appeared marginally economical, in which case it has been their practice to deny a license. The City of LeClaire was given until this summer to present evidence to the contrary. According to the City's engineering consultant, the high cost of fish mitigation measures prescribed by the Fish and Wildlife Service is the reason for the marginal economics. In an effort to circumvent the Service's prescriptions, the City has written to Secretary of Interior Manual Lujan requesting that the Service's prescriptions be changed to recommendations rather than prescriptions. If this request was granted, LeClaire would most likely not incorporate these fish protection measures in the project.

After learning of the request, the UMRCC wrote to Secretary Lujan urging that the Service's prescriptions remain mandatory. UMRCC is concerned that changing the status of the fish measures would set a very poor precedent for protecting commercial and recreational fisheries at the many other hydropower project sites under study along the river. The Service's prescription called for a large screening mechanism to divert fish away from the plant's intakes, and provisions for fish passage.

Another precedent setting hydropower project (for the Upper Mississippi) is under active study for Lake Pepin. Lake Pepin is a large natural river lake on the Upper Mississippi formed by its confluence with the Chippewa River flowage out of Wisconsin. Lake Pepin is located about 50 miles downstream from the Twin Cities.

In this project the Southern Minnesota Municipal Power Agency (SMMPA) wants to build a 500 megawatt pumped storage project near Lake City, MN. The plant would be located on the River's bluffs and serve to meet peak demand during the day and pump water up to a reservoir at night. It is estimated that approximately $10 million in environmental studies would be needed to prepare their license application. SMMPA is expected to decide later this year on whether or not to proceed with the licensing procedure.

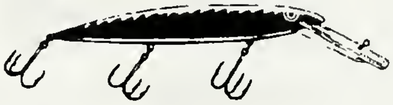
Source: UMRCC Newsletter July/August 1992.

Decline in Fishing

Marketing surveys commissioned by the American Fishing Tackle Manufacturers in 1990 and 1991 showed that there was a 9% decline in the number of anglers -- down from 69 million to 62.5 million. According to Tom McClernon, senior buyer for K Mart Corporation in Troy, MI and Chairman of the newly formed Sportfishing Promotion Council (SPC), "An adult or parent taught most of us to fish, but the ability to pass on that tradition has really been interrupted in this country, and our goal is to make it as easy as possible to give kids an opportunity to fish".

McClernon thinks, "...the decline can be stemmed somewhat. Fishing as an activity receives no marketing outside of the industry. I think marketing has to be extended to the general population to reach the entry level person."

"Fishing is going to make a comeback, and it's going to come back stronger than ever, said Joe Kuti, President of the SPC. The SPC is headquartered in Barrington, IL and is pouring $400,000 into activities aimed at promoting the sport. Of those funds, $250,000 came from a U.S. Fish & Wildlife Service grant and over $125,000 has been raised through donations from the fishing tackle industry.



The States as well as the industry are concerned about the decline because fishing license sales as a percentage of the population have been slightly declining across the country, reducing the potential revenues for state and federal fishery management work.

The first year's promotion by the SPC included 13 weeks of public service spots featuring George Jones and Travis Tritt on country music radio stations across the nation. There were also industry, state, and federally organized activities for kids and adults staged across the nation during National Fishing Week -- mostly in urban areas -- aimed at exposing people to fishing for the first time or bringing them back to the sport.

In Search of Quiet

During the first week of October Gordon Hempton, self dubbed as the Sound Tracker, pushed his canoe off from the shores of Lake Itasca, headwaters of the Mississippi, to begin paddling downstream in search of quiet. Hempton's only companion will be his spooky, tripod-mounted latex head, built to simulate human hearing.

Hempton is a dedicated recording artist of nature sounds. He plans to drift and paddle some 2,200 miles downstream to New Orleans creating a sound portrait of the Mississippi River, with the spirit of Mark Twain as his guide. He plans to reach New Orleans in about 5 months, before returning home to Seattle in March.

Hempton has travel across the USA, and around the world patiently searching for the "sound of daybreak". His work was the subject of a PBS documentary on Sunday October 4th.

Quiet places aren't easy to find, Hempton says. He was inspired for the Mississippi River trip by a visit to Turtle Island near Hannibal, Missouri, where he recorded the songbirds as Mark Twain described, "just going it!" "Even traveling around the world, never have I heard such a moving, heart-lifting, cheerful, danceable chorus, Hempton said.

"The Mississippi River remains one of the most scenic rivers in America", Hempton says. But "turn up the volume" on those silent pictures, and it's a completely different experience. Freight trains rumble on tracks near the river. The engines of tugboats groan to move their charge of barges upstream. Cars and trucks cut the quiet with a macadam whoosh. Power lines add their megahertz hum. Jets roar overhead. Unmuffled irrigation pumps drum away.

According to Hempton:

- The hum of power lines can be heard upward of 2 miles
- A chain saw cuts the quiet for more than 5 miles.
- Road noise can travel 8-10 miles.
- A coal-fired power plant can be heard as far as 15 miles away.
- A major airport can cast a "noise shadow" longer than 50 miles.

"Most people today", Hempton insists, "while they talk about quiet, do not have the experience of pure listening." He likens it to watching the Milky Way at night: Only when you get away from the ambient city lights is it possible to "become lost in the stars" -- just as you can become immersed in the sounds of nature and feel a part of life's great symphony. "Once you've heard the music of nature in its grand performance, the music never stops in your mind. You're always after more." He terms these blessed listening experiences "acoustical nutrition".

Hempton likens quietude to an endangered animal species and hopes his Mark Twain recordings will help publicize a budding Quiet Places Preservation campaign. Among his objectives: to open America's ears to the lack of quiet -- even in our huge national parks and wildlife preserves -- and to help the rare community that has a pristine listening spot to preserve and promote its endangered resource.

Gordon Hempton can be reached by writing to him c/o USA WEEKEND, 1000 Wilson Blvd., Arlington, VA 22229-0012.

Source: USA WEEKEND Magazine, October 2-4, 1992.

The McKnight Foundation Announces Mississippi River Grants

The Minneapolis based McKnight Foundation recently announced nearly $300,000 in grants for Mississippi River work which may have broad application.

Michael O'Keefe, Executive Vice President for McKnight, said, "These grants respond to ideas originating outside the Foundation. They support a variety of topics and strategies designed to meet local conditions...".

Grants include (1) development of techniques for reducing agricultural impacts on the environment, (2) assisting local groups to work to protect the environment of the Mississippi River and river-side communities, and (3) assisting with problems affecting people who are poor or disadvantaged.

The following is a list of grants of interest to fish and wildlife:

- **Arkansas Land and Farm Development Corporation, Brinkley, AR** -- Support for the Woodlands Management project, a training program to improve farmers' management of forests in Arkansas' Mississippi River delta ($25,000).

Contact Wilber Peer (501) 734-1140.

- **Carpenter Nature Center, Hastings, MN** -- Support for training to rehabilitate wildlife involved in major chemical spills on the Mississippi River ($22,000). Contact Jim Fitzpatrick (612) 437-4359.

- **Coalition to Restore Coastal Louisiana, Baton Rouge, LA** -- Support to develop a citizens' plan to restore the coastal wetlands of Louisiana's Mississippi River delta ($43,000). Contact: Michael Mielke (504) 766-0195.

Institute for Conservation Leadership, Washington, D.C. -- Funds to develop the Mississippi River Basin Alliance, coordinating efforts to restore the health of the Mississippi River ($20,000). Contact: Dianne Russell (202) 466-3330.

Land Stewardship Project, Lewiston, MN -- Funds to promote profitable, environmentally sound farming methods in the Whitewater River basin tributary to the Mississippi River ($43,000). Contact: Doug Nopar (507) 523-3366.

Louisiana Coalition, Inc., Baton Rouge, LA -- Support for the "River Communities Leadership Development Project", to strengthen citizen organizations working on environmental issues in Mississippi River communities between Baton Rouge and New Orleans ($24,328). Contact: Zack Nauth (504) 766-1484.

Minnesota Department of Natural Resources, St. Paul, MN -- Support for an education program, Mississippi River Fish Contamination: Information and Education for Southeast Asian Communities ($53,592). Contact: Steven Johnson (612) 296-0568.

The Minnesota Project, St. Paul, MN -- Funds to produce a directory of existing river stewardship networks in the Midwest and United States ($13,959). Contact: Beth Waterhouse (612) 645-6159.

National Fish and Wildlife Foundation, Washington, D.C. -- Funds for an analysis of the roles and budgets of federal agencies responsible for the Mississippi River's environment ($35,000). Anne Kinsinger (202) 857-0166.

Southern University Center for Energy & Environmental Studies, Baton Rouge, LA -- Support for a project ranking environmental issues and recommending strategies for their solution in the Mississippi River corridor from Baton Rouge to New Orleans ($19,711). Robert Ford (504) 771-4723.

Natural Resource Conservation: Where Environmentalism Is Headed in the 1990's

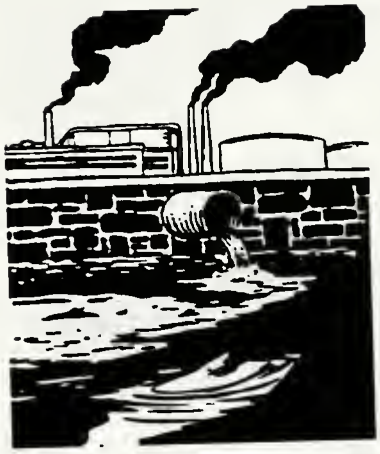
The subject publication was recently released by the Times Mirror Magazines and summarized in a presentation made at this year's Annual International Association of Fish and Wildlife Agencies meeting in Toledo, OH. The survey was conducted by The Roper Organization for Times Mirror.

The following summarizes some of the major findings:

- About 3 in 10 Americans think of themselves as "active environmentalists" while another 52% say they are "sympathetic" to environmental concerns though not active.

- Underlying the public's environmental concerns is a strong emphasis on protecting human health. This explains why the most serious problems, according to the public, include water pollution, toxic waste dumps, shortages of good drinking water, air pollution, and damage to the ozone layer.

- Broad ecological problems have not been as widely feared, although these issues are gaining wider attention in the press and among key groups of Americans. These ecological problems include a loss of open areas, woods, and natural places; global warming; the extinction of plants and animals; and a loss of wetland areas.



- Reflecting widespread concern about the environment, nearly two-thirds think environmental laws and regulations have not gone far enough. This result is all the more impressive considering the nation was mired in recession at the time of interviewing and the President recently had mentioned efforts to reduce such regulations as a way to bring on economic recovery.

- The public's environmental concerns are reflected in its regulatory priorities. Although majorities favor increased regulation in all five areas asked about, the most pressing have strong human health implications -- in particular, efforts to fight air and water pollution. Majorities also think tougher regulations are needed to protect wild and natural areas, wetlands, and endangered species.

- Nearly two-thirds think that economic growth and environmental protection can go hand in hand, while merely 1 in 4 believe a choice must usually be made between the two.

- When reasonable compromises between environmental protection or economic growth cannot be found, Americans overwhelmingly side with the environment. Nearly two-thirds think the environment is the more important concern, while only 17%

come down on the side of economic growth.

- Most Americans are conservationists, rather than preservationists, in that they believe natural places and things can be protected even while natural resources are used for the benefit of people and the economy.

- Virtually everyone believes it is possible to find a good balance between economic development and environmental protection goals, and that environmental quality is heading in a positive direction. One reason is a majority think technological solutions will help protect the environment.

- Even while optimistic about our chances for success, a substantial number of people view the present environmental situation as being extremely urgent.

- Half of Americans think federal efforts to protect endangered species have not gone far enough. But at the same time, they think the 1972 Endangered Species Act should be changed to consider costs and to make sure all species at risk receive proper, scientific consideration.

- The strongest arguments for protecting endangered species, according to the public, include the benefits that humans receive from protecting them, the need to maintain nature's delicate ecological balance, and a desire to fulfill a moral duty to protect all living species. But the public also thinks excessive cost can be a strong argument against protecting a particular species of plant, animal, or insect.

- With respect to wetlands, Americans' gut reaction is that more --not less-- should be done to protect these important resources. Nevertheless, there is a great deal of ambivalence regarding the technical definition of what constitutes a wetland.

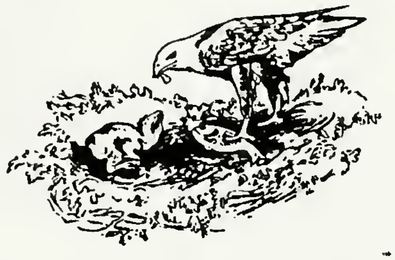
- Americans believe natural places and resources can be used for the benefit of people and the economy while also being protected. But they also strongly believe most commercial users of public natural resources ought to pay a fee to the government. In particular, they say companies involved in logging, hardrock mining, oil drilling, ski area development, livestock grazing, and commercial fishing should pay for the right to use federal resources. Recreational activities--with the exception of hunting--are considered acceptable without payment of a fee.

- Even at the risk of slower economic growth and fewer jobs in a recession, most Americans say it is worth making sacrifices for the sake of wetlands and endangered species protection.

- Taxpayers advocate "no new taxes" for the environment, but at the same time would shift federal spending from other areas into environmental programs.

- Consumers are willing to make a number of financial sacrifices in order to protect wildlife and the environment. But they will not make any and all sacrifices. Some ideas--such as tearing down large hydropower dams to help subspecies of salmon survive--are not considered worth the cost in higher utility rates for consumers.

- The rights of property owners are believed secondary in importance to protecting wetlands and endangered species. Even if it means that a financially strapped homeowner cannot sell a portion of land that is classified as a wetland to raise cash, the public says the environment is the more important concern.



- When trade-offs are made for the benefit of the environment, the public thinks that the costs should be paid by society as a whole, not by individuals alone. Whether to protect an endangered species or a wetland, most think property owners should be compensated financially when restrictions are placed on private land use.

- About a fifth of the public say they previously have cast votes on the basis of a candidate's environmental record. Compared to other people, these "green voters" are more educated, affluent, liberal, and more involved with outdoor activities.

- While green voters share many of the same concerns as other people, they are far more attuned to ecological issues such as the importance of wild and natural areas, wetlands, and biological diversity. If the federal environmental agenda is a reflection of the priorities of the body politic, then these conservation-oriented issues will continue to come to the forefront in the years ahead.

Copies of the complete document entitled "Natural Resource Conservation: Where Environmentalism Is Headed In the 1990's -- The Times Mirror Magazines National Environmental Forum Survey, June 1992" can be obtained by contacting The Roper Organization Inc., 205 East 42nd Street, New York, NY 10017.

MICRA

Mississippi Interstate Cooperative Resource Agreement
608 East Cherry - Columbia, Missouri 65201 - (314) 876-1911

MICRA Newsletter Questionnaire

Name ____

Address ____

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________ **I like the format of the Newsletter, please keep sending it to me.**

________ **I do not like the format of the Newsletter, here are my suggested changes:**

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________ **I recommend sending copies of the Newsletter to the following persons/groups:**

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Additional Comments:

River Crossings

Volume 1 November/December 1992 Number 6

Season's Greetings

This issue of "River Crossings" concludes its first year of circulation. We've enjoyed bringing it to you, and judging from the nearly 200 reader's who have responded with written words of assistance and encouragement, you've enjoyed reading it as well. Thank you for your support!

We'd like to wish all of our readers a safe and enjoyable holiday season. See you next year!

Reader Survey

Our next issue, Vol. 2, No.1, January/February, 1992, will include a mandatory reader survey. We will use this survey to streamline our mailing list by identifying regular readers and those who wish to remain on our mailing list.

In our first year we mailed unsolicited copies to many individuals and groups, and we feel its now time to review that list. We will assume that if a recipient does not respond to the survey it means that "River Crossings" is not being read, and the individual or group does not wish to remain on our mailing list.

We will continue to mail "River Crossings" free of charge to those individuals and groups who respond to our survey.

Interjurisdictional Rivers Bill Update

A new Congress will soon be in session, and efforts will begin again to introduce and pass what will now be the 1993 version of the **"Cooperative Interjurisdictional Rivers Fisheries Resources Act."**

The bill will need renewed support from constituents and co-signers. Contacts need to be remade with last year's sponsors and co-signers. A concerted effort is also needed on the part of all MICRA members and supporters to contact their respective Congressmen if we hope to see this bill pass.

Everyone is also urged to make your support known to Congressman Steve Gunderson in Washington, D.C. (202) 225-5506. If Mr. Gunderson cannot be reached, make your interests known to his Chief of Staff, Brad Cameron.

Your contact with Gunderson's office will go a long way toward renewing his efforts and enthusiasm. He needs to be made aware, first hand, of the magnitude of support you have for this bill!

MICRA Funding

Larry Peterman of Montana joined Mike Conlin of Illinois in "putting his money" behind MICRA. Larry followed Mike's lead and paid $1500 annual dues to MICRA for his State.

The Policy Sub-Committee has not recommended a dues fee for MICRA. At this point, the fee is based solely on a willingness and

ability of members to pay.

We are currently using the MICRA treasury to fund printing of "River Crossings", and to support Committee activities and reports, as well as to cover the costs of MICRA's promotional activities.

Policy Sub-Committee Supports Pallid Sturgeon Stocking

The MICRA Policy Sub-Committee met by conference call on October 28th to consider recommendations of the Paddlefish/Sturgeon Committee for the release of pallid sturgeon spawned this season under direction of the Pallid Sturgeon Recovery Team at the Blind Pony Fish Hatchery in Sweet Springs, MO.

A brief discussion made it clear that MICRA is not usurping any of the Pallid Sturgeon Recovery Team's responsibilities, and that we support stocking of the pallid sturgeon only after appropriate genetics tests have been completed to insure that fish being stocked are not hybrids.

With these matters clarified, the Policy Sub-Committee reached consensus in support of the Paddlefish/Sturgeon Committee's recommendations to stock the pallid sturgeon as recommended in the minutes of the September 26th Committee meeting in Rapid City, SD.

The following MICRA recommendation was forwarded to Mark Dryer, Leader of the Pallid Sturgeon Recovery Team, in a letter from MICRA Chairman Wes Sheets:

"This one-time release of pallid sturgeon would only occur if genetics analyses confirm that they are, indeed, pallid sturgeon and not a hybrid. Fifty to two-hundred pallid sturgeon would be stocked into 2-3 small reservoirs. The fish are expected to be about 12" in length at release, sometime in November 1992. Receiving reservoirs would support as high a benthos population as possible, with little opportunity for the fish to escape during high water. These fish would provide a source of known-age pallid sturgeon, if needed, for use in scientific studies at some future date or as a source for aquariums or other needs. All remaining fish would be released into the lower 100 miles of the Missouri River and the Mississippi River reach bordering Missouri (St. Louis to Caruthersville). If possible, all released fish would be tagged with coded wire tags. If that is not possible, 10% would be tagged with PIT tags and all fish released would be tagged externally."

Note: The projected November release of these fish passed without a finding of their genetic purity. They remain in captivity at the Blind Pony Hatchery pending that finding.

Contaminants in Pallid Sturgeon

Dick Ruelle and Kent Keenlyne of the U.S. Fish and Wildlife Service's Pierre, SD Ecological Services Field Office recently completed the subject report.

Liver, kidney, muscle, and reproductive tissues from three

River Crossings

Published by

Mississippi Interstate Cooperative Resource Agreement (MICRA)
608 East Cherry
Columbia, MO 65201

MICRA Chairman
Wes Sheets, Nebraska Game and Parks Commission, Lincoln

MICRA Policy Committee
Wes Sheets, Member at Large
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Jim Fry, Missouri Department of Conservation, Jefferson City
Larry Peterman, Montana Department of Fish, Wildlife and Parks, Helena
Frank Jernejcic, West Virginia Department of Natural Resources, Fairmont
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MICRA Coordinator/Executive Secretary and Newsletter Editor
Jerry L. Rasmussen, U.S. Fish & Wildlife Service, Columbia, Missouri

River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

pallid sturgeon collected from the Missouri River were analyzed for 23 elements and organochlorine pesticides.

Cadmium, mercury, and selenium concentrations were elevated in all tissues. The highest concentrations of cadmium (1.03 mg/kg dry weight) and selenium (5.28 mg/kg dry weight) occurred in a fish collected from Nebraska.

Highest mercury content (16.00 mg/kg dry weight) was found in a fish taken in North Dakota.

Isomers of DDT were found in all tissues analyzed, with the highest concentrations in reproductive tissues. DDT in all tissues ranged from 0.08 to 0.44 mg/kg wet weight, DDD from 0.02 to 1.71 mg/kg wet weight, and DDE from <0.01 to 3.78 mg/kg wet weight.

Elevated PCB concentrations of 28.52 mg/kg in reproductive tissues, 20.51 mg/kg wet weight in liver, and 25.36 mg/kg wet weight in muscle exceeded the FDA action level, as did gamma chlordane (1.30 mg/kg wet weight) and alpha chlordane (1.27 mg/kg wet weight) in reproductive tissues.

The report concludes that the potential role of contaminants in the decline of pallid sturgeon populations needs further assessment.

Finding on Petition to List the Paddlefish

The U.S. Fish and Wildlife Service (Service) announced on September 22, 1992, a 12-month finding for a petition to amend the List of Endangered and Threatened Wildlife and Plants to include the paddlefish (*Polyodon spathula*).

The Service found that listing the paddlefish as "threatened" is not warranted. "Because of the uncertainty of the species' status in several portions of its range, the Service intends to reclassify the paddlefish from a category 3C to a category 2 species under authority of the Endangered Species Act of 1973, as amended. The Service believes that this classification change will encourage further investigation and biological research of the species' status throughout its range."

Paddlefish occur in 22 States and are primarily inhabitants of large rivers like the Missouri, Mississippi, and Ohio, but they are also found in several of the large river tributaries and in several Gulf Coast streams. Threats to the species include habitat modification, an apparent lack of natural reproduction in some areas, and overexploitation of their eggs as a source of caviar in national and international markets.

"Although the status review is complete and the period for receiving official comments has expired, the Service remains interested in receiving comments, suggestions, and current scientific information applicable to the status of these species as it becomes available. Comments may be submitted until further notice."

Questions or comments and materials concerning this notice should be sent to the Field Supervisor, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement, 1500 Capitol Avenue, Bismarck, ND 58501.

The petition, finding, and supporting documents are available for public inspection, by appointment, during normal business hours at the Bismarck Office or at the Service's Denver Regional Office, 134 Union Boulevard, Lakewood, CO 80225.

For further information contact: Dave Allardyce, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement, 420 South Garfield Avenue, Suite 400, Pierre, SD 57501-5408, (605) 224-8693.

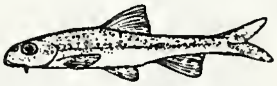
Source: Federal Register, Vol. 57, No. 184, pp. 43676-43682.

MICRA Paddlefish/Sturgeon Committee

Chairman Kim Graham (MO) has not yet scheduled a second meeting of the Paddlefish/ Sturgeon Committee. Plans were to have the Committee meet when the pallid sturgeon being held at Missouri's Blind Pony Fish Hatchery were ready for release. That release date has not been set, pending a finding of their genetic purity.

Speckled Chub Status Review

The Tulsa Field Office of the U.S. Fish and Wildlife Service is attempting to gather baseline data on the status and distribution of the speckled chub, particularly the Arkansas River subspecies (*Macrhybopsis aestivalis tetranemus*) to determine whether this subspecies meets the criteria for listing as threatened or endangered under the Endangered Species Act.



Recent surveys in Kansas, Oklahoma, and Texas indicate that this subspecies has declined over a considerable portion of its range in the Arkansas River System. The subspecies may also have been extirpated from the Arkansas River in Arkansas.

The Arkansas River speckled chub is presently classified as a category 2 candidate species by the Fish and Wildlife Service. The status of this subspecies is unknown, despite the apparent decline within the Arkansas River System.

Additional information is needed to clarify several questions about its status. Any data, information, or comments on the distribution, abundance, stability, and taxonomic validity of this subspecies would be extremely beneficial to the Service's efforts. Information on potential or ongoing threats to this subspecies would also be helpful.

Please direct any questions or send available information to: Ken Collins, U.S. Fish & Wildlife Service, Ecological Services, 222 S. Houston, Suite A, Tulsa, OK 74127, (918) 581-7458.

Corps of Engineers to Streamline Their Agency

U.S. Army officials in Washington, D.C. released the "U.S. Army Corps of Engineers Reorganization Plan" on November 19th. Congress directed the Corps in 1990 to consider alternatives for updating the Corps structure and processes.

The Corps plan, produced after 14 months of study, calls for a comprehensive reorganization at all administrative levels, as well as a streamlining of processes throughout the organization. Under the plan, all district offices will remain open and will retain project management, construction, operations/maintenance, regulatory and emergency functions.

Five million dollars requested by the Administration and approved by Congress will be utilized in fiscal year 1993 to begin implementation of the headquarters and division portions of the plan. Annual savings from plan implementation are estimated at $115 million. The plan also calls for the estimated reduction of approximately 2,600 positions in Corps offices across the country by 1995.

According to an official Corps' News Release (19 Nov 92), "The reorganization of the Corps will benefit the public through reduced management and overhead costs, expedited decision-making and enhanced responsiveness."

The first phase of the Reorganization Plan will begin in February with the movement of Corps military and civilian leadership to the new divisions. Eleven division offices will be consolidated into six. The new Corps division boundaries are shown in Figure 1. No other movement of Corps personnel is anticipated until mid-fiscal year 1993.

- Huntsville and Transatlantic Divisions were not addressed under this plan. The Alaska District will be realigned under the Pacific Ocean Division (POD). The POD commander has also been tasked to make further recommendations to improve POD's efficiency.

- The New England Division, located in Boston, will become the North East Division (NED). The North Atlantic Division in New York will close; its functions, with the exception of Norfolk District, will be consolidated at NED.

- The Ohio River Division in Cincinnati will become the North Central Division (NCD). The existing North Central Division in Chicago, will close, as will the Missouri River Division in Omaha, with the functions consolidated at the new NCD.

- The South Atlantic Division in Atlanta will become the South East Division (SED). Norfolk District's functions will fall under SED.

- The Lower Mississippi River Division in Vicksburg will become the South Central Division (SCD). The Southwest Division in Dallas will close and consolidate with SCD. Albuquerque District, now under the Southwest Division, will not fall under the new SCD, but under the new Western Division.

- The North Pacific Division in Portland will become the Western Division (WD). The South Pacific

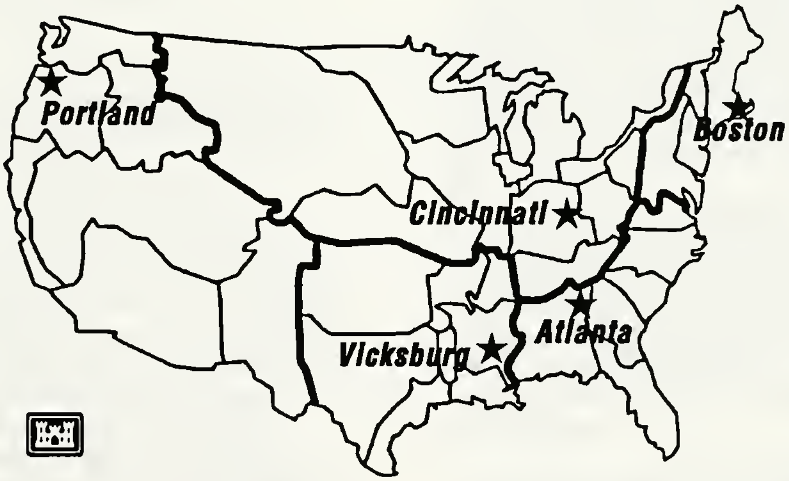


Figure 1. New division boundaries of the U.S. Army Corps of Engineers. Courtesy of the Corps' Reorganization Program Office.

New Corps of Engineers Division Structure

North East Division (NED) Boston	North Central Division (NCD) Cincinnati	South East Division (SED) Atlanta	South Central Division (SCD) Vicksburg	Western Division (WD) Portland
Districts:	*Districts:*	*Districts:*	*Districts:*	*Districts:*
Baltimore ◆★*	Louisville ◆ *	Jacksonville ◆	Fort Worth ◆★*	Los Angeles ◆
Boston ◆ *	Omaha ◆ *	Norfolk ◆ *	New Orleans ◆	Sacramento ◆★*
Philadelphia	Pittsburgh ◆	Mobile ◆ *	Tulsa ◆ *	Seattle ◆ *
New York	St. Paul ◆	Charleston	Galveston	Albuquerque
	Buffalo	Savannah	Little Rock	Portland
	Chicago	Wilmington	Memphis	San Francisco
	Detroit		Vicksburg	Walla Walla
	Kansas City ★			
	Huntington			
	Nashville			
	Rock Island			
	St. Louis			

◆ indicates locations of Technical Centers
★ indicates locations of Administrative Centers
* indicates locations of both military and civil design

Division in San Francisco will close and consolidate functions at Portland.

In addition, division policy review functions will transfer to the new Central Review Center (CRC), to be located in Washington, D.C. Technical functions will move to 15 Technical Centers collocated with the Districts. Administrative functions will move to five regional Administrative Centers.
Divisions will continue to perform command and control functions, program management, and regional interface.

The Corps' Headquarters Office (HQ) in Washington, D.C. will retain functions of program guidance, resource allocation, corporate leadership, and coordination with other major commands and federal agencies.

The Planning and Engineering Divisions of the Directorate of Civil Works at HQ will be reduced as the technical review functions are eliminated and policy review functions are transferred to the newly created CRC.

The decision team felt these changes would eliminate redundant reviews and significantly expedite project approval.
The second phase of the Reorganization Plan calls for changes in the Corps' district offices, subject to available funding in fiscal year 1994. No districts will close, though there will be process changes implemented. One new district will be added in Boston for a total of 36 districts within the continental U.S. According to Corps documents, "The districts will remain to continue quality service to the community."

The districts' planning and engineering functions will be relocated from 21 of the districts to 15 Technical Centers, collocated with 15 existing districts. The Technical Centers will also perform real estate functions. The rationale here is to significantly enhance skills development for engineers and planners by assuring that the place to which they are assigned maintains a constant and varied workload.

Because the Corps traditionally experiences wide fluctuations in workload, the plan was set up so that the work force will be large enough to sustain significant changes in the volume of work without having to deplete or add to the core base.

- The NED in Boston will include four districts (Baltimore, Boston, Philadelphia, and New York). The

technical centers will be collocated at the Baltimore and Boston districts, and both districts will be both military and civil design districts.

- The NCD at Cincinnati will include 12 districts (Louisville, Omaha, Pittsburgh, St. Paul, Buffalo, Chicago, Detroit, Kansas City, Huntington, Nashville, Rock Island, and St. Louis). Technical centers will be collocated with Louisville, Omaha, Pittsburgh, and St. Paul districts. Both military and civil design functions will take place at Louisville and Omaha.

- The SED at Atlanta will include six districts (Jacksonville, Norfolk, Mobile, Charleston, Savannah, and Wilmington). Jacksonville, Norfolk, and Mobile will have technical centers. Norfolk and Mobile will have both military and civil design capabilities.

- The SCD at Vicksburg will include seven districts (Fort Worth, New Orleans, Tulsa, Galveston, Little Rock, Memphis, and Vicksburg). Technical centers will be located at Fort Worth, New Orleans, and Tulsa. Both military and civil design functions will be at the Fort Worth and Tulsa districts.

- The WD at Portland will include seven districts (Los Angeles, Sacramento, Seattle, Albuquerque, Portland, San Francisco, and Walla Walla). Los Angeles, Sacramento, and Seattle will house the technical centers, with both military and civil design functions located at Sacramento and Seattle.

The reorganization plan will also markedly change the ways of doing business. Through adoption of the "Project Management Concept", the Project Manager will be allowed to shop among the 15 technical centers to find the center that can best satisfy the requirements of the customer. Adding competitive market conditions should also constrain cost growth and develop a greater commitment to keeping schedules.

In addition to an annual savings of $115 million, Corps documents point out that proposed benefits to the reorganization plan include:

- Maintenance of a strong local interface with customers and partners as every district retains regulatory, project management, construction and operations functions.

- Reduced management overhead costs by consolidating divisions.

- Reduced project cost and improved timeliness through single-layer review for policy and technical matters.

- Concentrating planning, design and review experts in one area enhances technical depth and absorbs workload peaks and valleys. This also creates better opportunities for career progression and learning.

- Managerial efficiencies are achieved through administrative consolidations through automation and communication technologies.

- Consolidating functions in Administrative Centers brings increased expertise and higher-quality services.

The estimated total one-time cost for implementation of this restructuring plan is $215 million, including costs for personnel actions, relocation of employees, the movement of offices and other contingencies.

The Corps has not undergone a major reorganization since 1942. Following a series of studies, Congress appropriated $5 million in the 1993 Energy and Water Bill to reorganize the Corps headquarters and its geographic divisions. An additional $7 million may also be applied to the reorganization effort through authority written into the bill for the transfer of funds from other sources. The bill also includes a provision prohibiting the Corps from closing any district offices.

Source: News Release, November 19, 1992, Office of Assistant Secretary of Defense (Public Affairs), Washington, D.C. 20301; and The Reorganization Wrap-up, "A publication to discuss the immediate issues of Corps reorganization", Vol. 1, No. 1, Nov. 19, 1992.

Upper Mississippi River Navigation Concerns

The Upper Mississippi River Conservation Committee (UMRCC) has been quiet for some time, seemingly content over the way things have been going on the Upper Miss since settlement was reached in 1986 regarding the Lock and Dam 26 (St. Louis) navigation/ environmental confrontation of the 1970s.

However, in their September/ October 1992 Newsletter, UMRCC Chairman, Mark Heywood

(Minnesota DNR) has raised, in his "Chairman's Letter", what may become significant issues.

Heywood states, "Of critical concern to the Upper Mississippi River and the resource managers who strive to manage and protect the ecosystem are the various federal authorities and programs which set much of the future direction for the river. As such, the preliminary information concerning the long awaited navigation study proposals is disappointing."

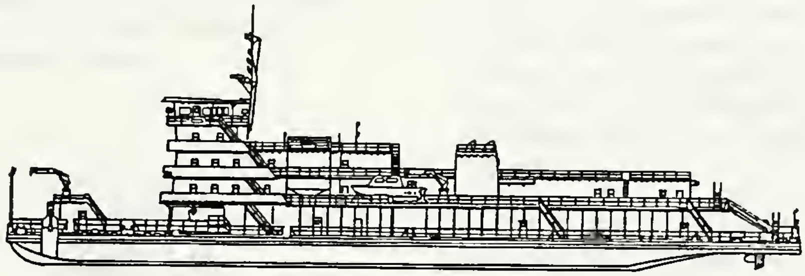
He goes on to say, "Many of the people working on the river are becoming increasingly concerned with the messages being received from both the Corps of Engineers and the Long Term Resource Monitoring Program (LTRMP). First of all, it is obvious that the proposed level of navigation environmental studies is no where near what the Second Lock Plan of Study (POS) called for. Since the 1970's, the environmental community has been promised that adequate navigation impact studies would be accomplished. Unfortunately, the message we are receiving is that environmental concerns are again taking a back seat to navigation. Second, recent state concerns regarding the priorities of the LTRMP indicate apprehension that a change from emphasis on long term monitoring to research and navigation studies may occur."

Further, he states, "It is imperative that we realistically assess the navigation issue and its effects on the environment. We must address the long-term system changes which have been and will continue to affect the UMR. Delayed studies, reduced funding, and changes in priorities will not help us address these issues."

The political compromise reached on Lock and Dam 26 in the early and mid 1980's was that a second lock 600 ft in length could be constructed at a cost of $190 million. However, at the same time a 10-year $190 million environmental program would be implemented, including construction of habitat enhancement projects and long term monitoring of selected environmental parameters. Congress authorized and is funding these recommendations, but failed to endorse a recommended waiver for an EIS on the second lock, saying that would be too precedent setting.

Lock construction began almost immediately, and after a slow start the environmental program finally reached full funding in 1991, and was extended five years to cover the delayed start.

The Corps (along with interagency participants), took several years to prepare a POS for evaluation of the projected navigation effects from expanded navigation. Estimated cost of studies needed to develop an adequate EIS was $27 million. Funding for those studies and implementation of the POS has been tied up in policy review at the Corps' Washington office level for several years.



In a follow-up article to UMRCC Chairman Heywood's comments, the UMRCC Newsletter reports on recent progress of the POS and the future of navigation effects studies in an article entitled, "Navigation On The UMR....The Next Chapter Begins":

"State, federal, and private concerns were treated to their first glimpse of how the L/D 26 Plan of Study (POS) and The Combined Illinois and Mississippi River Navigation Study will be implemented by the Corps of Engineers. Colonel Albert J. Kraus, District Engineer for the Rock Island District, briefed attendees at the quarterly Environmental Management Program Coordinating Committee (EMPCC) and Upper Mississippi River Basin Association (UMRBA) meetings regarding the Corps' progress on the navigation studies.

'Uppermost in many people's thoughts was how would the POS be implemented. Colonel Kraus stated that, at this time, the POS as a separate entity unto itself was dead. According to Colonel Kraus, critical elements of the POS have been incorporated into the proposed navigation study. At present the study is scheduled to take the next six years if the current proposal is approved. No written details of the study proposal were distributed since the draft report is still being reviewed by the Corps Headquarters in Washington. Official distribution of the reconnaissance report is now anticipated by the end of November '92......Sometime after that release, there will be a Reconnaissance Resolution Conference at which formal approval for the three UMR Corps Districts to proceed with the studies may be given. It is at this

conference that other key "partners" such as the U.S. Fish and Wildlife Service, and the states will hopefully be given an opportunity to comment on the report.

'Preliminary environmental cost figures of the study proposal, as relayed at the meetings in LaCrosse, are very disappointing to those familiar with the navigation/POS issue. A total study cost of $23 million is proposed by the three UMR Corps Districts. Out of this $23 million, approximately $9 million is programmed for environmental studies which include an Environmental Impact Statement, and both systemic and site-specific studies. This is a far cry from the $27 million that the POS estimated was necessary to determine navigation effects. The Corps' claims that through this study effort, and another $1.8 million in navigation related studies by Environmental Management Program monitoring program efforts, the "most important" POS investigations will be completed. Judgement on whether or not this can be accomplished will have to wait until the reconnaissance report can be examined."

All kinds of new methods of expanding navigation on the Upper Miss have been and are being considered, including additional new locks. However, the Corps doesn't seem willing to "bite the bullet" and address the navigation effects issue head on. Perhaps they realize just how severe the impacts may be on large river fisheries, and would rather not have the public know!

Nationally, the UMRCC has taken the lead in "holding the line" on navigation expansions on large rivers since the mid-sixties when a 12-foot channel was being proposed on the Upper Miss. Many of the state and agency biologists involved in the projects of the 1960's, 70's, and 80's have retired or moved on for one reason or another. It looks as though the lot to "hold the line" will now fall on a new generation of UMR biologists. As in the past, the UMRCC will likely rise to the occasion!

This issue may be of significant interest to many of the MICRA states because the outcome on the Upper Miss will undoubtedly effect how the Corps addresses future navigation impacts and expansions on the Missouri, Ohio, Tennessee, Cumberland, Kanawha, Monongahela, Red, Arkansas, and other large navigable rivers in the Basin!

Source: The UMRCC News Letter, September/October 1992, Upper Mississippi River Conservation Committee, 4469 48th Avenue Court, Rock Island, IL 61201.

Missouri River Recreation (in Nebraska?)

Recreation on the Missouri River, anywhere between its mouth and the large Dakota and Montana reservoirs, may seem like an oxymoron to many observers. However, a recent study and draft report completed by the Nebraska Game and Parks Commission suggests otherwise.

This was the first ever such survey conducted on the Missouri River bordering Nebraska, and it may cause some critics to step back, take a harder look at this important resource, and rethink some long-held views.

The survey was conducted during the period May through August 1992, and expanded to cover the entire 1992 year using the stratified probability method of sampling developed by George Fleener (retired), Missouri Department of Conservation.

Over the 385 mile reach bordering Nebraska, 59 public access sites and 1510 private sites were surveyed. Total public recreational use for the three month survey period was over 11,682,000 hours. This was expanded out for entire year to total over 21,922,000 hours. Total private use was estimated at over 48,781,000 hours for the entire year, bringing the grand total use to more than 70,703,000 hours.

The estimated national economic development value for this recreational use reportedly ranged from $29 to $40 million. Recreationists traveled an estimated 117 million miles in 1992 to use this resource. Estimated fish catch for May through August was over 267,000; with freshwater drum, channel catfish, carp, walleye, and goldeye/herring comprising the top six fish species, representing 84% of the catch.

A similar study conducted by Fleener in the mid 1980's on Missouri's 553 mile reach of the Missouri River showed much less recreation -- as much as 28 times less during a high water year!

If the Nebraska data are accurate, this is an excellent indication of the importance of large rivers in areas where natural recreational resources are scarce, even if these large rivers are considered by many to be unattractive, channelized ditches.

The Missouri River cuts through the heart of the corn belt in eastern Nebraska and western Iowa, where there are few water-based natural recreational resources available for public use. Most of the small rivers are shallow, channelized, and turbid, with limited access across private lands. In this situation, the Missouri River, even in its present state, is an attractive natural resource to many users; especially those without the means to escape for a weekend in search of a higher quality regional recreation area.

Since the Nebraska reach doesn't differ markedly from the Missouri reach, the much lower recreational use documented by Fleener for the Missouri reach is likely a function of the immediate availability in Missouri of the Ozarks' streams and lakes.

Where demand is as high, as it appears to be along the Nebraska reach of the Missouri River, one can only speculate as to the value it might provide should we be able to improve its quality through better management practices.

As a comparison, 1982 estimates of recreational expenditures along the Upper Mississippi River bordering eastern Iowa place their value at over $201,000,000. It is doubtful that the Missouri River could ever achieve the status of the Upper Mississippi, but there certainly appears to be a market of users available to capitalize on any improvements that could be made.

For those interested in reviewing Fleener's methodology for sampling of recreational activity it is described in his survey of the Missouri reach cited below.

Sources: Hesse, L.W., G.E. Mestl, P.P. Sensenbaugh, P.A. Thornblom, R.J. Hollis, T.L. Nuttlemann, and J.A. Vaughn. (1992) Recreational Use Survey of the Missouri River in Nebraska - Summer (Draft). D-J Proj. No. F-75-R. Nebraska Game and Parks Comm., Lincoln, NE. 29 pp + Tables.; G.G. Fleener (1989) Recreational Use Survey of the Missouri River in Missouri. Missouri Dept. of Conservation, Jefferson City, MO. 52 pp. + Apps.; UMRCC (1982) Outdoor Recreation: Big Business on the Upper Mississippi River System. Upper Mississippi River Conservation Committee, 4469 48th Ave., Ct., Rock Island, IL 61201.

Economic Benefits of River Cleanup

Thirty years ago many people considered the Nashua River in north central Massachusetts a dead river, and the task of cleaning it up impossible. A milestone in the Nashua clean up effort was the vision and persistence of local river advocates to use the Clean Water Act of 1963 to upgrade the Nashua's State classification.

The Nashua Committee did a tremendously thorough job of building and organizing support for the Massachusetts Clean Water Act which provided for public input to river use classification.

The Committee then spent most of a year organizing and preparing for the State hearing on the Nashua's classification. Their goal was to have the Nashua classified as "B", meaning it was suitable for swimming, fishing, and public water supply. Industry representatives and some politicians asked for a "D" classification. State officials compromised by giving the Nashua a "C" classification with an amendment for "B"-level bacterial standards.

A great benefit to the classification was that it ensured state and federal funds would be available for river clean up work, most importantly money for building wastewater treatment plants, which were essential to the clean up effort. Over the years through cooperation among governmental agencies, industries, and labor unions, seven new sewage treatment plants have been built to remove 90% of the pollutants.

Problems still persist, and the Committee remains active, but the argument that environmental clean up means economic hardship doesn't go too far in the case of the Nashua. No hard-corps studies are available to document it, but according to River advocates several observations are worth noting.

- First, by acting quickly municipalities and industries along the Nashua were able to get federal and state funds to pay a significant portion of the costs for many wastewater treatment facilities.

- Second, before the Nashua clean up, riparian land was virtually worthless. Today, riverfront property is assessed at higher value than adjacent property. Many of the old factories along the river are being converted to condominiums, restaurants, and offices.

- And third, three decades ago, no one wanted to go near the Nashua, but today it's an important recreational resource. The Nashua is becoming well known for having a great bass fishery. Fishers travel from throughout the eastern U.S. to participate in the Nashua's bass

fishing tournaments.

For more information about the Nashua River clean up, refer to Berger, John (1987) Restoring the Earth: How Americans are Working to Renew Our Damaged Environment, Anchor Press Doubleday. The Nashua River Watershed Association can also be contacted as follows: NRWA, 609 Massachusetts Ave., Lunenberg, MA 01462-1352.

Source: River Voices, Sept. 1992, Vol.3, No. 3., P.O. Box 8787, Portland, OR 97207.

Hurricane Andrew Costs Louisiana's Crawfish and Oyster Industry $39 million

Ron Dugas, Oyster Program Manager for the Louisiana Department of Wildlife and Fisheries said that the storm hit an area of the State that usually produces 22% of the State's oyster crop. Damages could reach $30 million.

He said that an average of 60% of that area's crop was damaged by silt dredged up by Andrew and deposited to a depth of 1 to 3 ft on the oyster reefs. "They say that the marshland is lost. Well, it's not totally lost. We know where much of it is today...on top of the oyster reefs," Dugas said.

The mud, which must be removed, smothered the oysters, he said, adding that just as harmful was the uprooting of vegetation, whose decomposition sharply degrades dissolved oxygen in the water.

Considering the industry as a whole, Dugas said that Louisiana is fortunate to have an oyster industry that is spread over such a wide expanse of coastline.

Surviving in fairly good shape were oysters in Plaquemines Parish, which leads the State with more than 125,000 of the State's 325,000-plus acres of private oyster leases. Affected to some extent was Plaquemines production on the west side of the Mississippi River. Production was unaffected in Calcasieu Lake in Cameron Parish. "Oysters on the east side of the Mississippi River survived in good shape", according to Paul Thibodeaux, Extension Service fisheries agent for Plaquemines.

Production losses to Louisiana's crayfish farmers could reach $9.8 million according to projections by the LSU Agricultural Center. Dr. Wendell J. Lorio, aquaculture specialist with the Ag Center's Louisiana Cooperative Extension Service, said the total loss includes estimated losses from both farm-raised and wild crawfish crops in six parishes damaged by the hurricane: Iberia, Lafayette, Lafourche, St. Martin, St. Mary, and portions of Iberville.

"Premature flooding of crawfish ponds poses a major problem in production of farm-raised crawfish," Lorio said. "If crawfish producers are not able to remove or manage this untimely water, water quality will deteriorate quickly because of the high organic loads in the ponds," he said.

Premature flooding will cause crawfish to emerge from their burrows and become exposed to inferior water conditions, he said. The adults may survive by crawling out of the water, but the young will be destroyed.

Production of crawfish in the wild could be significantly reduced without proper flushing of growing areas with waters from the Mississippi, Ohio, and Red rivers, Lorio pointed out.

Source: The Aquaculture News, Vol. VII, No 1, October 1992.

Zebra Mussels Found Attached to Native Mussels on the Mississippi River

The first scientific evidence (known to us) of the zebra mussels attaching themselves to native Mississippi River mussels has been reported in the Wisconsin/Minnesota reach. Previously, however, Mississippi River clammers had been reporting numerous incidences of such attachment.

According to Greg Cope, an aquatic toxicologist at the National Fisheries Research Laboratory (NFRL) in La Crosse, WI, "We've had a rapid expansion of the zebra mussel this summer."

Cope found zebra mussels attached to native mussel shells in the La Crosse area, in lower Lake Pepin (just south of Red Wing, MN), and at the navigation dam near Trempealeau, MN. Lake Pepin is a natural river lake formed by the confluence of the Mississippi with the Chippewa River (Wisconsin).

Cope said the NFRL is conducting zebra mussel experiments in three areas. He said good progress is being made on a toxicant. There is preliminary evidence that some chemicals may be toxic to the zebra mussels, but not so much to native organisms.

He said they are investigating a biochemical means that would inhibit the zebra mussel from producing the sticky excretion that

glues them to objects, such as other mussels. Without the attachment to solid objects, he said, they die.

Other research is aimed at interfering with spawning and reproductive cycles. One mature female can produce 40,000 eggs in a season. They hatch in four days, and water currents can carry the microscopic larvae -- called veligers.

Source: Gazette, Cedar Rapids, IA Daily, Sept. 5, 1992.

Zebra Mussel Technical Notes Available

The second in a series of Zebra Mussel Technical Notes has been published by the Corps of Engineers' Waterways Experiment Station in Vicksburg, MS.

The series includes 25 technical notes covering environmental testing, control methods, control strategies, and a miscellaneous category.

The environmental testing series describes zebra mussel biology, ecology, and recommended control strategies; a chlorine treatment program; a monitoring program in the Louisville District; a hand-held sampler; a protocol for environmental compliance; and an assessment of mussel filtration rates.

The control methods series includes discussions of thermal sprayed coatings, copper-based marine antifoulants, zinc-rich paints, high-pressure water jetting and carbon dioxide pellet blasting, construction materials that act as deterrents, vendors that provide services and equipment, accelerated corrosion of ferrous metals resulting from zebra mussel infestations, nontoxic foul-release coatings, freeze survival of aerially exposed zebra mussels, aerial exposure and mortality, and upper temperature limits.

The control strategies series includes discussions of control using flap gates associated with drainage structures; in fire prevention systems that use raw water; on floating plants; on waterway gauging stations; on components of hydropower projects sensitive to mussel infestation; using environmentally sound strategies at drainage structures, pumping stations, and water intakes; and on components of vessels and dredges.

The miscellaneous series includes one article on the susceptibility of different ages of concrete to zebra mussel infestation.

The series can be obtained by contacting Ms. Pat Humphries or Ms. Paula Rockett, Zebra Mussel Research Program, U.S. Army Engineer Waterways Experiment Station, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, (601) 634-2571.

Zander Draws Fire From Canadian Fisheries Officials

The zander (*Stizostedion lucioperca*), a European fish, similar to our walleye, has come under criticism from Manitoba fisheries officials as a result of an article that appeared earlier this year in the "In-Fisherman" magazine. The article dealt with North Dakota's past efforts to introduce the species into its lakes and rivers.

According to an August article in the "Forum", a Fargo, ND newspaper, North Dakota's zander project is on hold at the request of Gov. George Sinner.

Dr. Richard O. Anderson (USFWS, retired) suggested in the In-Fisherman article that experimentation go ahead, but that it be carefully controlled and that possibly sterile zander be used. Anderson says that studies on the zander could be carried out with today's technology without risking irreversible consequences.

In a telephone conversation with the MICRA Coordinator more than a year ago, Dr. Anderson expressed interest in the species, saying it stemmed from a desire to find a large predator that survives well in large, swift, turbid rivers such as the lower Missouri. His research on the species was initiated by a former student's visit to Europe and a subsequent student literature search on the species. This lead Anderson to believe that the zander may be a desirable predator species for the unimpounded portion of the Missouri downstream from Gavin's Point Dam.

Dale Henegar of Bismarck, former North Dakota fishery chief and later head of the Game and Fish Department, studied the zander over a long period of time before urging its introduction in his State.

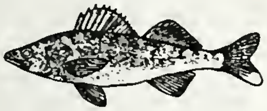
The first zander eggs were brought into North Dakota in 1987, but they were destroyed when it was believed that they carried a disease which potentially threatened northern pike. The eggs were later found to be disease free.

Efforts in 1988 failed when hot weather and possibly salamanders in the ponds destroyed the hatched fry. In 1989, fishery crews were successful in introducing 1,050 fingerlings into Spiritwood Lake north of Jamestown. The lake was chosen because it is a closed-basin

lake. At least one zander was caught by an angler and one taken in a net, but there has been no confirmed reports on zanders in the lake since 1990.

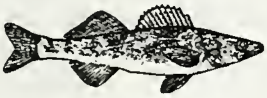
Points made by Manitoba officials to "In-Fisherman" and a long list of other recipients follow:

- Zanders present a threat to native species from a multitude of perspectives. "We believe there is a real possibly that the zander would displace the walleye and sauger from much of its range in the United States and southern Canada." The commercial catch of walleye and sauger (exclusive of the Great Lakes) has a sales value to Canada of $35 million.



walleye

- The zander's greater tolerance of warm water than walleye presents the possibility that they will be able to establish themselves and become abundant over much of the range of basses, sunfish and crappies...We feel that they would become serious predators on both the forage species used by these very important native pan and game fish and on the basses, sunfish and crappies themselves.



sauger

- Past introductions of exotic fish, except for brown trout, have had either documented or potential but undocumented negative effects. "all have escaped confinement, either intentionally or accidentally."

- "There is a risk that the introduction of zander also would result in the introduction of new fish diseases and parasites into North America."

- "Spiritwood Lake is heavily used by open water anglers and ice fishermen. With this public access, zander inevitably would be transported by overzealous anglers into both the Missouri and nearby Hudson Bay drainages, opening its way to all of North America east of the Rocky Mountains."

- In our view, the entire fish population of Spiritwood Lake should now be removed by poisoning the lake to assure that no zanders from the 1989 planting survive."

The letter was signed by Dennis G. Wright, Environmental Affairs Coordinator, Regulatory and Native Affairs, Central and Arctic Region, Canada Department of Fisheries and Oceans, Winnipeg; William G. Franzin, Research Scientist, Canada Department of Fisheries and Oceans, Winnipeg; Arthur J. Derksen, Fisheries Biologist, Manitoba Department of Natural Resources, Winnipeg; and Kenneth W. Steward, Professor, Department of Zoology, University of Manitoba, Winnipeg.

According to G. Sterba (1966) Freshwater Fishes of the World, The Pet Library Ltd.: The zander is "Widely distributed through Central Europe, southwards to northern Italy, eastwards to the U.S.S.R., northwards to the Baltic, westwards to the River Werre; in large rivers, very numerous in the lagoons of the Baltic; average length about 40-55 cm...lives in large open stretches of water, preferably over a hard bottom. In summer it resorts to slightly turbid, opaque waters which provide it with adequate shelter. The young fishes feed chiefly on small organisms, but when they are only about 15 cm. long (one year old) they become fish-predators...Sexual maturity is usually attained in the third year. The spawning season is from April to the beginning of June and is determined by the temperature of water (12-14 degrees C). The eggs are large (about 1.5 mm), and strongly adhesive, and are laid, often in clumps, on hanging roots, stones or pieces of waterlogged wood. Large females not infrequently produce as many as 200,000 to 300,000 eggs. The parents are said to guard the spawn for sometime. The young hatch after 8-12 days and, after a short resting-period, spiral to the surface in order to fill their swim-bladders with air...ranks with the best food fishes."

FERC's Platte River Draft EIS Rejected

The U.S. Environmental Protection Agency and the Department of the Interior have rejected as inadequate FERC's draft environmental impact statement on relicensing two projects on Nebraska's Platte River. The report was given a "3 -- inadequate" rating by EPA. Interior issued similar criticism, and both agencies are calling for a revised Draft EIS.

EPA can refer the Central Nebraska Public Power and Irrigation District's Kingsley Dam and Nebraska Public Power District's North Platte/Keystone Diversion Dam matter to the Council on Environmental Quality if the agencies cannot reach agreement on relicensing.

Source: Hydro Review/September 1992

Upper Mississippi River Hydropower Projects Update

The Lake Pepin (Lake City, MN) pump-back hydroelectric facility project has been dropped by

sponsors. The 500 megawatt peak demand facility would have used 650 megawatts of low demand, low cost night time energy to pump water up the river bluff. After 21 months of study, sponsors concluded it was questionable whether they could get a license due to environmental opposition from natural resources agencies as well as public and private groups, most notably the Izaak Walton League of America.

The Federal Energy Regulatory Commission has granted another time extension to the City of LeClaire to document economic benefits and financial feasibility of constructing and operating a hydroelectric project at Lock and Dam 14, delaying the decision for a fifth time. The extension was granted because the city is waiting on a response from the Secretary of the Interior to relax the Fish and Wildlife Service's mandatory prescriptions for mitigating fish impacts.

Source: The UMRCC News Letter, September/October 1992, Upper Mississippi River Conservation Committee, 4469 48th Avenue, Rock Island, IL 65201

Groups Must Show Injury to Invoke Endangered Species Act

The Supreme Court has ruled that environmental groups lack standing to challenge government action under the Endangered Species Act unless members can show they will suffer individual, concrete harm.

Defenders of Wildlife claimed the Agency for International Development should have consulted the Interior Department before funding dams in Sri Lanka and Egypt that might affect endangered species. Group members claimed they intend to visit those countries to observe the endangered species someday. The court said the group lacked standing to sue because members' injuries were too vague and speculative. Although the ruling could make it more difficult for environmental groups to sue under the Endangered Species Act, in most cases, it is easier to find an injured party if the action occurs in the U.S.

Source: Hydro Review/Sept. 1992

Keeping Track of the Resource Abuse Movement

The July/August issue of "River Crossings" (Vol. 1, No.4) included an article entitled "Resource Abuse Movement?" As a follow-up to that article we have come across additional information which seems to add credibility to the Resource Abuse Movement's existence.

According to a letter to the editor of River Network, the Wilderness Society has created a program called, "New Voices", designed to counter the resource abuse movement by working with concerned citizens and providing them media training, technical and financial assistance. A New Voices newsletter is published monthly.

According to Kathy Kilmer of the Wilderness Society, the newsletter tries to keep activists informed about the resource abuse movement and issues they are likely to encounter when dealing with anti-environmentalists.

Kilmer says the newsletter is free and can be obtained by writing her at: The Wilderness Society, 7475 Dakin Street, Denver, CO 80221

Source: River Voices, September 1992, Vol. 3, No. 3.

New Publications

Rivers Handbook: Volume 1: Hydrological and Ecological Principles, Edited by Peter Calow and Geoffrey E. Petts. Blackwell Scientific Publications, 544 pp., $179.95 (Hardcover), ISBN: 0-632-02832-7.

This is the first of two volumes resulting from research over the past two decades focusing on the ecological impact of water projects. This work assesses the scientific and ecological principles used to develop a rational, integrated approach to rivers management. Commencing with an overview of river systems, subsequent sections cover the physicochemical environment emphasizing the importance of the factors defined by biota. A major section describes biota--from microorganisms to vertebrates--and their importance in rivers. Ecosystems and processes are discussed in full, and final chapters bring together all the properties and processes discussed earlier in descriptions of five river types: sub-temperate, temperate, large alluvial tropical, semi-arid, and mountain. Volume two (due for publication in 1993) will develop the philosophy and principles of sound ecological management.

River Conservation and Management: Edited by P.J. Boon, P. Calow, and G.E. Petts. John Wiley and Sons, 484 pp., $145.00 (Hardcover), ISBN: 0-147-92946-8.

This book is intended for all those with an interest in achieving greater integration of conservation in the management of river systems. Following the introduction, which outlines the objectives and applications of river management, the book is organized in four sections. The first sets out the case for conservation, using examples from specific river systems around the world. the second discusses ways of classifying rivers and

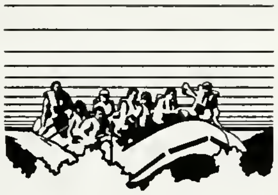
assessing their potential for conservation. Detailed examples of recovery and rehabilitation are described in the third section, and the final part outlines various means of river protection within a legal framework, based on experiences in the United Kingdom and North America.

Restoration of Aquatic Ecosystems: Science, Technology, and Public Policy - National Research Council. National Academy Press, 567 pp. $39.95 (Hardcover), ISBN: 0-309-04534-7.

This book outlines a national strategy for aquatic restoration, with practical recommendations covering both the desired scope and scale of projects and needed government action. It features case studies of aquatic restoration activities throughout the country. The book examines (1) key concepts and techniques used in restoration, (2) common factors in successful restoration, (3) threats to the health of the nation's aquatic ecosystems, and (4) approaches to evaluation before, during, and after a restoration project.

River Information Digest: American River Management Society, P.O. Box 621911, Littleton, CO 80162-1911.

Prepared with assistance from the Bureau of Reclamation, the Bureau of Land Management, and the USDA Forest Service, the "River Information Digest" summarizes basic information to help boaters plan a river trip in the western United States. Rivers included in the book are those that have whitewater opportunities on segments 10 miles or longer, and those rivers that are components of the Federal, state, and local Wild and Scenic River System. After an introduction that gives general information on low-impact camping and defines whitewater class designations, the chapters are arranged alphabetically by state. Each chapter includes a map, and information matrix on all the rivers described in the chapter, and an introduction. Within each chapter, the rivers are listed alphabetically and the segment is identified. Each section includes a one-line description of that river, then specific information--length of segment; technical difficulty; what permits, if any, are required; regulations governing river use; and whom to contact for more information. At the end the book is a final chapter providing a list of sources for additional information, alphabetically by state.



500 Great Rails-Trails: Rails-Trails Conservancy, 1400 16th St. N.W., Suite 300, Washington, D.C. 20036. $9.95, plus $1.50 for shipping and handling.

This book highlights 500 trails in 44 States that have been converted to trails from old rail lines. The directory lists the name, length, end-points and surface material for the trails, which in total stretch more than 5,000 miles.

River Conservation Directory: U.S. Government Printing Office, Superintendent of Documents, Mail Stop:SSOP, Washington, D.C. 20402-9328, (202) 783-3238, 150 pp. $10.00, Stock No. 024 005 01104 8.

This Directory, developed by American Rivers and the National Park Service's Rivers, Trails and Conservation Assistance Program, includes agencies and organizations, both public and nonprofit, whose missions directly involve river conservation. The document is organized by federal agencies, national organizations, multistate organizations, and state agencies and organizations. It also includes an index.

Meetings of Interest

UMRCC 49th Annual Meeting, March 9-11, 1993, Chestnut Mountain Ski Resort, Galena, IL. Contact: Jon Duyvejonck, UMRCC, 4469 48th Avenue Ct., Rock Island, IL (309) 793-5800.

Watershed '93 -- "A National Conference on Watershed Management", March 21-24, 1993, Alexandria, VA. Contact: Jennifer Paugh, Terrene Institute, 1000 Connecticut Ave., NW, Suite 802, Wash., D.C. (202) 833-8317.

The Ecological Basis for River Management: An International Symposium, March 22-26, 1993, University of Leicester, U.K. Contact: Dr. David Harper, Ecology Unit, Dept. of Zoology, University of Leicester, Leicester LE1 1RH

Mississippi River Research Consortium 25th Annual Meeting, April 22-23, 1993, Holiday Inn, LaCrosse, WI. Contact: Teresa Naimo, USFWS, National Fisheries Research Center, 2630 Fanta Reed Road, LaCrosse, WI 54602 (608) 783-6451

1994 International Large Rivers Conference/Workshop, June 12-15, 1994, LaCrosse, WI. Contact: Dr. Ken Lubinski, USFWS, Environmental Management Technical Center, 575 Lester Drive, Onalaska, WI 54650 (608) 783-7550

Biodiversity

H.R. 5969 (Hoagland, D-NE) would create a National commission on the Conservation of Biological Resources.

Endangered Species

S. 3286 (Seymour, R-CA) would authorize federal loans to local governments to buy land for habitat conservation.

H.R. 6123 (Thomas, R-CA) reauthorizes spending for Endangered Species Act through fiscal 1997, requires economic impact analysis of recovery plans for listed species while requiring compensation for economic losses attributable to the act.

H.R. 6134 (Tauzin, D-LA) is a major industry-labor backed reauthorization bill that reauthorizes and increases spending for the act while requiring compensation for economic losses and draft recovery plans with listings.

Energy

H.R. 776 reauthorizes the abandoned mine land reclamation fund through fiscal 2004. Money in the fund comes from a coal tax and is used, in part, to restore abandoned coal mining land. The bill stops the Interior Department for one year from issuing a definition of valid existing rights, which lays out who has a right to mine coal in protected areas such as national parks and wildlife refuges. The bill also includes a modified version of a House proposal that bars the Federal Energy Regulatory Commission (FERC) from issuing new hydropower licenses if the dams damage national parks. State and local government powers to block hydropwer projects are greatly increased by the bill. Project licenses are barred from using eminent domain powers to condemn land that already is in State or local parks, recreation areas or wildlife refuge areas. Licensees will have the power to condemn newly designated park, recreation or wildlife refuge land following a public hearing and a finding by the FERC that the project will not damage the park. (Awaiting President Bush's signature.

Fish & Wildlife

H.R. 5617 (Omnibus Oceans and Fisheries Bill) includes S.1491, which seeks to promote public-private partnerships to fund $18 million in grants to conserve non-game fish and wildlife (Awaiting President Bush's signature).

Water Projects

H.R. 6167 provides $2.2 billion over two years for 23 Corps of Engineers water projects, including port development, inland waterway, flood control projects, and $140 million in federal spending and $287 million non-federal costs for the Kissimmee River, Florida restoration project. (Awaiting President Bush's signature).

Wild & Scenic Rivers

H.R. 5021 and **S.2890**, both of which authorize the study of a 20 mile segment of the New River (VA/WV) as a possible addition to the national system of Wild and Scenic Rivers.

Wilderness

S. 1696 designates 1.5 million acres of Montana's national forests as wilderness (passed House).

Wildlife Refuges

S. 2572 authorizes land exchange between Potlatch Corp. and the federal government involving about 60,000 acres in Idaho and Arkansas that will add over 40,000 acres to two Arkansas refuges. The timber company, would transfer 40,922 acres of wooded wetlands between the Cache and White River national wildlife refuges to the federal government along with an additional 1,170 acres of fishery habitat in Idaho. In return, Potlatch will get about 17,625 acres of federal timberland in Idaho.

Source: Land Letter - The Newsletter for Natural Resource Professionals, Vol. 11, No. 28, October 20, 1992.

Merry Christmas!

River Crossings

NATURAL HISTORY SURVEY
LIBRARY

Volume 2 January/February 1993 Number 1

Reader Survey

This issue begins the second year of circulation for *River Crossings*. Our mail circulation has now reached 565 copies.

On this first anniversary we thought it was appropriate to check signals and see where the newsletter has been, where it is going, and where we might want it to go in the future.

As part of that effort, we compiled our mailing list into a table showing geographic location and affiliation of our readers. We wanted to see cross-sectionally what types of people and organizations are being reached. That information is summarized for your review later in this issue.

As a second part of our mailing list review we are circulating a mandatory reader survey. It is attached to the mailer of this issue, and will be used to streamline our mailing list by identifying regular readers and those who wish to remain on our mailing list.

In our first year we mailed unsolicited copies to many individuals and groups, and we feel its now time to take a second look at that list. Unless recipients of this issue complete and return our survey, we will assume that *River Crossings* is not being read, and those individuals or groups who do not respond will be removed from our mailing list.

We will continue to mail "*River Crossings*" free of charge to those individuals and groups who respond to the survey.

Interjurisdictional Rivers Bill Update

As the new Congress returned to the 1993 session, efforts are being renewed to introduce and pass what will now be the 1993 version of the **"Cooperative Interjurisdictional Rivers Fisheries Resources Act."**

As in 1992, the bill will need support from constituents and co-signers. Contacts need to be remade with last year's sponsors and co-signers. It is especially important that a concerted effort be made by MICRA members and supporters to contact their respective Congressmen in order to gain renewed and/or additional support for the bill.

Everyone is also urged to make your support known to Congressman Steve Gunderson in Washington, D.C. (202) 225-5506. If Mr. Gunderson cannot be reached, make your interests known to his staff.

Your contact with Gunderson's office will go a long way toward renewing his efforts and maintaining his enthusiasm. He needs to be made aware, first hand, of the magnitude of support you have for this bill! This is especially important now because (as of this writing) the bill has not yet been reintroduced.

The inside word is that the bill was

looked on very favorably by many members of the last Congress and may be even more widely supported this session. So everyone interested in MICRA needs to get the word out and rally support for the bill as soon as you can!

MICRA Funding

Jack Wingate of Minnesota joined Mike Conlin (IL) and Larry Peterman (MT) in "putting his money" behind MICRA by requesting that his state provide $1500 annual dues.

Wes Sheets has asked the Coordinator to send out a mailing in the near future (as soon as all the bugs are worked out of the joint federal aid project scenario), asking all state Steering Committee members to contribute $1500 annual dues to MICRA, either in the form of a cash contribution or through a joint federal aid project.

The Policy Sub-Committee has not set a dues structure for MICRA, instead the fee is based on willingness and ability of members to pay.

The MICRA treasury is used to fund the printing of "*River Crossings*", and to support various Committee activities and reports, as well as to cover the costs of some of MICRA's promotional activities. The MICRA Paddlefish/Sturgeon Committee (formed last fall) is becoming more active and we can expect to see interest in forming other committees in the not too distant future.

MICRA Paddlefish/Sturgeon Committee

Chairman Kim Graham (MO) has scheduled the second meeting of the Paddlefish/Sturgeon Committee for February 10-12 in Columbia, MO at the Missouri Department of Conservation, Fish and Wildlife Research Center.

The Committee plans to develop a MICRA Strategic Plan for the interjurisdictional management of paddlefish and sturgeon species in the basin. The Committee will begin that process by developing goals, objectives, and initial tasks for this work.

Pallid Sturgeon Recovery Plan Being Finalized

The official public comment period on the Draft Pallid Sturgeon Recovery Plan ended on October 27, 1992. Of the 48 comment letters received, most were complimentary, but concern was voiced "over plan recommendations to more closely operate main stem dams to simulate the natural hydrograph, to screen industry intakes, to utilize hatcheries as a recovery tool, and to proceed with costly recovery measures until more information is obtained on the

River Crossings

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MICRA Coordinator/Executive Secretary and Newsletter Editor
Jerry L. Rasmussen, U.S. Fish & Wildlife Service, Columbia, Missouri

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River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

reasons for species decline".

The Recovery Team is addressing those concerns, and a final plan is proposed for completion early this spring.

Because of concerns about operation of the Pick Sloan power plants, a Midwest Power Producers/ Fish and Wildlife Service communication forum or workshop may be forthcoming.

Contact: Mark Dryer, Recovery Team Leader, (701) 250-4491.

Genetics of Missouri River Pallids Still Unknown

Genetic Analyses, Inc. submitted a quarterly progress report in October to the Corps of Engineers, Omaha, describing the DNA testing to be used on the pallid, shovelnose, and suspected hybrid sturgeon samples collected last season.

Total DNA was extracted from 117 blood samples and quantified. The DNA was extracted using protease digestion, extraction with organic solvents, and ethanol precipitation. Fish erythrocytes contain nuclei and yielded large quantities of DNA. Single Copy Gene Analysis is being utilized because it provides fast, accurate, and unambiguous DNA level markers that are transportable and reproducible. Results should be available next year.

Lack of definitive information from this study is keeping the fate of some 10,000 pallids???, being held at Missouri's Blind Pony fish hatchery, in limbo. This has not been a significant problem over the winter months, because seasonal cold temperatures caused the fish to quit feeding late last fall. But as temperatures warm, more feed will be required and Missouri will be wanting an answer soon as to whether to stock or bury the fish.

According to informed sources, one offer has been received by Missouri to purchase the fish if they are not pallids for use in commercial markets overseas.

Middle Mississippi River Biologists and Hydrologists Hope to Pursue Cooperative Projects

Missouri and Illinois biologists hope to join forces with St. Louis District Corps of Engineers hydrologists in the next few months to improve fishery habitat on the Middle Mississippi River.

The Middle Mississippi is defined as the 195 mile reach between the confluences of the Missouri River on the north and Ohio River on the south.

This project came as a result of discussions last fall between the MICRA Coordinator, and the St. Louis District's Chief of Planning (Owen Dutt) and Chief Hydrologist (Claude Strauser).

Strauser informed the Coordinator that in recent years, as District hydrologists developed new channel control techniques, they have come to realize that, contrary to previous belief, they do not need to capture all the river's flow in the main channel to maintain the 9-foot navigation channel. Strauser said he has communicated this to some of the state biologists, but has had difficulty getting them to agree on how the river could best be managed to improve fishery habitat while satisfying navigation needs.

The Coordinator suggested that perhaps MICRA could help improve communications and bring biologists and engineers together to develop a mutually satisfactory plan. Dutt and Strauser were interested and meetings are currently being scheduled.

Strauser suggested that he would like to designate the entire 195 mile reach as a research area, and work with biologists to improve fishery habitat, while maintaining the navigation channel. He said that, among other things, it should be possible to create habitat diversity by building islands to create new side channels and slackwater habitats.

He said the obligation of the states and agencies in this venture would be to monitor the biological effects of any habitat/channel management actions. If any project is found to produce undesirable results, modifications could be made until the desired results are obtained.

We applaud Dutt and Strauser on their interest and initiative, and look forward to working with them to improve this important resource.

Corps Navigation Study Gets Underway on the Upper Mississippi and Illinois rivers in the Midst of Controversy

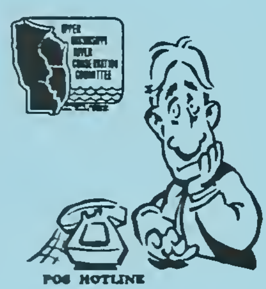
A six-year feasibility study of various navigation improvements on the Upper Mississippi and Illinois rivers unofficially began at a Corps of Engineers Reconnaissance Resolution Conference held in Chicago on December 9th and 10th.

The Chicago meeting had the twofold purpose of (1) gaining Corps' Headquarters approval to proceed to the feasibility phase and (2) soliciting public input into the proposed feasibility study plan. According to the November/ December UMRCC Newsletter, official approval has not been given, but the three Corps Districts involved have already begun some feasibility phase tasks anyway. Their assumption being that study approval is forthcoming.

The Corps' proposed six-year feasibility study is designed to examine the needs of the entire Upper Mississippi River (UMR) navigation system over the next 50 years and select the best array of navigation improvements. After which a systemic Environmental Impact Statement (EIS) would be completed to determine the environmental effects of recommended improvements. Site specific design work (and a site specific EIS) for each proposed lock and dam would follow.

According to the UMRCC Newsletter, the Corps was strongly criticized by environmental proponents. The UMRCC also noted that even..."Some of the navigation proponents recognized certain environmental insufficiencies in the study plan."

One of the more universal criticisms levied against the Corps was their failure to coordinate with state and federal resource agencies in preparing the environmental agenda of the proposed six- year study. The UMRCC reported in their September/October Newsletter that several elements of the L/D 26 Navigation Effects Plan of Study (POS) were either eliminated or reduced in scope without input from the agencies who originally participated in its development.



The UMRCC, U.S. Fish and Wildlife Service, state natural resource agencies, and others insisted at the Chicago meeting that the environmental study plan, as proposed in the September 1992 Initial Project Management Plan (IPMP), is insufficient to quantify the systemic impacts of increased navigation. In addition to inadequate funding of POS tasks, concerns were raised regarding the ability to complete certain scientific and planning investigations within the proposed study time frame.

In light of the River's tendency to act anything but "normal" for a given investigation, some short-term study results could be based on abnormal data just to meet study schedules. In the past, UMRCC biologists have maintained that at least 3-5 years of study are needed for any research effort to capture what might be considered to be some semblance of "normal" river conditions.

Another common deficiency recognized, by the UMRCC in particular, was the fact that the Corps' study purpose is predominantly the investigation of system-wide navigation improvements, while environmental protection and enhancement are discussed only as subordinate elements. The UMRCC sent the Corps a strong message that the UMR ecosystem should be a co-equal partner with navigation in any long-term planning effort.

According to the UMRCC Newsletter, the current feasibility study is attempting to justify, in one step, a major expansion and renovation of the UMR's nine-foot navigation project. Construction costs resulting from this authorization will most certainly be in the multi-billion dollar range.

Construction cost of the single new, recently completed, Lock and Dam 26 (L/D 26) project at Alton, IL exceeded $1 billion. It should be noted that 1978 estimates for the cost of L/D 26 were around $500 million, but by project completion these costs had escalated to over $1 billion.

With this kind public investment at stake, it shouldn't be difficult, from a cost-benefit perspective, to justify the inclusion of long-range ecosystem management and planning.

The Water Resources Development Act (WRDA) of 1986 recognized the UMR as both a nationally significant ecosystem and transportation system. The UMR environmental community believed then and now that, enhancement aside, it is critical to initiate long range planning for the protection of existing fish and wildlife resources. Because the Corps is the "action agency" proposing development plans that could drastically alter existing environmental conditions, the responsibility to ensure that this planning is funded and completed is largely theirs.

The WRDA, also authorized a 10-year $200 million UMR System Environmental Management Program (EMP), as a compromise to allow for expansion of navigation capacity, and this seems to make inclusion of environmental measures in current efforts mandatory.

More than 10 years after the construction start for L/D 26, mitigation for systemic impacts has not been addressed. The lack of specific details regarding how mitigation planning would be implemented was also noted by reviewers as a major study plan deficiency.

According to the UMRCC Newsletter, a Corps' Lower Mississippi Valley Division official has stated that mitigation planning for L/D 26 would not begin until after the limited POS investigations, included in the proposed six-year feasibility study, are completed. So, in effect, the Corps is going to attempt to quantify the systemic impacts of possibly seven expanded locks and dams before they complete the planning for the one 600 foot lock in question at L/D 26. That will be a minimum of sixteen years after construction of L/D 26 was begun and more than six years after construction was completed!

The need to perform an independent (non-Corps of Engineers) transportation needs analysis was also identified. Such an analysis should answer questions such as whether or not an expanded nine-foot channel project is the most economical and practical way to accommodate future transportation needs (i.e. are railroads or other transportation modes more practical when all costs are considered). This was also an issue in the 1960's and 70's when L/D 26 was first proposed, but was not adequately addressed.

Some prominent towing industry representatives called for speeding up project development by authorizing site specific design work before completion of the six year system feasibility study! Proponents argued that unless the planning schedule was speeded up, major traffic congestion would occur that would cost the towing industry millions of dollars annually, not to mention the increased likelihood of accidents, etc.

This was the same argument industry leaders made in the 1970s when the L/D 26 issue was being addressed by development of a major Master Plan. They used this argument to bring political pressure on the Master Plan's Environmental Work Team and caused environmental studies to be short-circuited in order to speed lock construction. Consequently, environmental impacts could not be adequately addressed, and this created the need for the political compromise which produced the 10-year, $200 million EMP, authorized by the WRDA '86.

Unfortunately, little evaluation of the effects of navigation has been completed in the interim, either by the Corps or the EMP. So it would seem that we are "back to square one" in what seems to have become somewhat of a game, perhaps called, "How to avoid assessing the environmental impacts of expanded navigation on the UMR".

This time, however according to the UMRCC Newsletter, some navigation proponents have indicated a willingness to work with the environmental community in achieving its goals, provided that this work does not cause delays in study progress. The Midwest Area River Coalition (MARC 2000), representing a number of river dependent interests, "...even chided the study plan because of the way the navigation impacts studies were reduced in scope."

As stated in the UMRCC Newsletter, "Biologists would do well to maintain an open dialogue with reasonable navigation interests, such as MARC 2000. The avoid and minimize program now underway in the St. Louis District is a good example of how such a dialogue can accomplish positive results."

The UMRCC is reportedly taking a "wait and see" attitude regarding the Corps' response to the comments received at the December 9th meeting. That response will likely determine how far the Corps of Engineers is willing to go in addressing environmental concerns.

River Crossings carried an article in our September/October issue entitled, "The Corps of Engineers' New Environmental Ethic", as described by Colonel Gaylerd E. Davis, Deputy Commander of the Missouri River Corps of Engineers in Omaha, speaking for the Chief of Engineers in Washington, at the Annual Meeting of the American Fisheries Society. The reader is referred to that article.

What Colonel Davis described does not at all appear to be what we are witnessing on the UMR navigation study. We thought Colonel Davis' comments showed promise for the future. We hope we were right! What is happening with navigation planning on the UMR has basinwide implications which fishery biologists should be watching very carefully across the basin.

The Corps' reluctance to address the systemic impacts of navigation expansion on the UMR environment puzzles us. Are they afraid of what might be found? Are they concerned that basinwide implications may be exposed by scientific studies that would be best kept under wraps?

This may be an issue MICRA, or interested states outside of the UMR, may wish to investigate further and voice an opinion on, since navigation expansion has both site-specific and system-wide impacts (both economically and environmentally) that could drastically affect fisheries resources.

In the words of Mark Heywood,

UMRCC Chairman, "These concerns beg the question 'If costs associated with commercial navigation include the costs of environmental losses, other shipping alternatives may exist, and the demand for shipping may not increase as projected. Is it (then) really most economical to society as a whole to continue with multi-billion dollar expenditures for navigation improvements?' If we haven't looked at all the costs and alternatives, and it appears we haven't, we should question the wisdom of moving forward."

The questions raised by Mr. Heywood, and others, are not new. They are the same questions that were posed by the environmental community in the 1960s, 70s, and 80's. Some of us are old enough and have been around long enough to remember!

So as we move into the decade of the 1990's, will we see a "new environmental ethic" in the Corps, or will history repeat itself as the two sides gear up for yet another confrontation. Let's hope we can move forward with the "new environmental ethic", as Colonel Davis described last fall!

Written copies of Colonel Davis' remarks are available upon request from the Coordinator's office.

Source: The UMRCC News Letter, November/December 1992, Upper Mississippi River Conservation Committee, 4469 48th Avenue Court, Rock Island, IL 61201.

Environmental Groups Oppose Multi-Billion Dollar Expansion of Locks and Dams System on the Upper Mississippi and Illinois Rivers

A news release dated, Wednesday, December 9, 1992 from the Midwest Office of the Izaak Walton League of America (IWLA) stated that a number of national and local environmental groups have accused the Bush Administration of "a rush to judgement ...that will set a course to spend several billion dollars" on a U.S. Army Corps of Engineers proposal to build what would be the *"most expensive expansion of a waterway's navigation capacity in our nation's history"*.

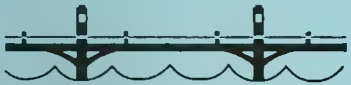
Paul Hansen, director of The IWLA Midwest Regional Office said, "It is entirely inappropriate for a lame duck administration to be making a determination to go forward on an environmentally destructive pork barrel project of this magnitude, especially before there has been any independent analysis on whether the project is really necessary or a comparison of what a similar investment in a range of transportation alternatives might yield. This project will likely destroy much of the remaining recreational and biological value of the rivers. While the Corps calls this a feasibility study process, we know from experience that it is actually a justification process."

The groups, including the Izaak Walton League of America (IWLA), Sierra Club, Quad Cities Conservation Alliance and American Rivers, Inc., made their announcement at the December 9th public meeting held by the Corps to discuss their proposed plan to add 1200' locks at up to 16 sites on the Upper Mississippi and Illinois rivers. The new 1200' locks would speed lockage of the maximum size 15 barge tows using the river by permitting lockage without breaking the tow in two to fit through the current 600' locks. This would have the potential of doubling the current capacity of the system, thus doubling the impacts of tow passage on the environment.

The statement of the joint environmental groups called for a full investigation of alternative modes of commodity transport by an objective and independent group. Their statement said that this investigation should precede any additional spending on plans for navigation expansion.

They also called on Congress "...to obtain an independent analysis of the data and assumptions used by the Corps to justify a navigation expansion of this scale. The Corps' projections of future traffic have been disputed for many years. Agricultural products make up close to one-half of the commodities on the river, and there is simply not enough new cropland to put into production to justify the increases in commodity transport envisioned in this plan. No evidence has been provided to indicate that any increased need that does occur could not be absorbed by the Duluth/Superior port, or other alternatives."

"Congress should also obtain an investigation into what a similar investment in a range of transportation alternatives might yield. These should include a number of measures already being discussed by planners and natural resource officials in the region: 1) improvements in other existing regional infrastructure, such as highways or rail lines, some of which are currently under-utilized; 2) improvements in alternative access to divert cargo and increase utilization of the infrastructure of existing ports, such as Duluth, St. Louis or Chicago, some of which are also currently under-utilized; 3) construction of a 21st century infrastructure, such as high speed trains or pneumatic pipelines; and/or 4) rebuilding the navigation fleet rather than the navigation infrastructure with 21st century materials to enable cargo to be carried in vessels with only a six-foot draft."



According to the group's statement, "... both measures 3 and 4 could have the added advantage of eventually allowing a phased dismantling of the locks and dam system -- reducing operational costs and returning much of the river system to a free-flowing state. Biologists have been documenting a frightening decline in river species and habitat in recent years, and feel that the future of the river's environment depends on the establishment of a new hydrologic regime."

They propose "... an analysis, which would be performed by the National Research Council and funded by the Corps, to study the alternative approaches to navigation, the assumptions and the economics of managing the UMRS for both navigation and the environment. Costs of the study could be diverted from the Corps' Initial Project Management Plan (IPMP) proposed budget of $600,000 for the Corps and the public to exchange information about the plan. The public groups we represent would much rather see this money spent on a meaningful study of the real costs and alternatives to this project by some of the nation's best scientists, as represented by the National Research Council of the National Academy of Sciences, than on another meaningless round of public comments and meetings with the Corps that will almost certainly be ignored. The environmental community does not have the resources nor the intention of participating in another protracted 'public involvement' exercise that past experience has shown us will not result in any significant action.

'This analysis should also assess the economic benefit to the environment, and to recreation in the region, that would accrue from not building this project. The Upper Mississippi River between St. Louis and St. Paul alone contains over 500 river miles and 236,000 acres of national wildlife refuge, as well as over 60 state conservation areas. It is home to millions of wading birds, is breeding grounds and wintering grounds for the endangered bald eagle and is crucial migratory habitat for as much as 40% of the nation's remaining waterfowl. The Upper Mississippi River Wildlife and Fish Refuge alone experiences more visitor days per year than Yellowstone National Park.

'The Illinois River once supported an enormous hunting, fishing and wildlife recreation industry, but has lost much of this industry due to the dramatic decline in water quality and habitat in recent years, due in large part to the effects of navigation.

'As our population grows, the recreational value of wildlife, lands and rivers is skyrocketing. Over the life of this proposed project, the economic value of these rivers for recreation may be of much greater value than the continued use of the river for commodities transport, especially if alternative means can be identified and developed. For example, in their Strategic Plan for Illinois Fisheries Resources, the Illinois Department of Conservation concluded that demand for sport fishing exceeds supply by 50% and will exceed supply by 85% in the year 2000. While there are alternative means available for moving our goods, we can create no more prime recreational opportunities and

wildlife habitat, such as the restoration of this river could provide.

’We have already seen several cases where the public spent hundreds of millions of dollars on navigation expansion in areas where it was not needed and where recreational value of the waterway far exceeded the value of commodity transport. Two rivers were destroyed to construct the massive Tennessee - Tombigbee Waterway, but the primary value of the project today is for recreational boating -- a value that existed prior to construction. Closer to home, the Lower Kaskaskia was channelized, destroying much of its recreational value, but was never utilized for navigation at the levels predicted. On the Missouri River, states are suing the Corps to maintain water levels because the water has a much greater economic value to the state for recreation than for commodity transport.

’Even though Congress has repeatedly mandated that the UMRS be managed for both navigation and the environment, there has been a neglect of the biological and recreational resources of the river’s environment for many years. The future of the river is put at additional jeopardy by the Corps of Engineers each time a new navigation improvement project is built, when a series of environmental promises are made, but are never kept. A study to identify mitigation needs for the most recent of these projects, construction of a second lock at Locks and Dam 26, has not even been started, even though the construction on the navigation project began years ago.

’Similarly, forty-three simple and generally low cost measures to ’avoid and minimize’ the environmental impacts of navigation were identified by the U.S. Fish and Wildlife Service in 1986, but, in spite of a series of promises, few of these measures have been implemented. Information on the status of these measures has not been provided to the environmental community despite repeated requests to the Corps. Overall, while there has been some environmental planning, there has been little to no environmental doing.

’It is our conclusion, based on the past 20 years of our involvement with navigation expansion projects, that the Mississippi and Illinois River ecosystem will be largely destroyed as a significant biological and recreational resource if these projects are approved. A proposed navigation expansion of this scope and magnitude puts this river system, its environment, and its people at a critical juncture. The crucial decision on whether to proceed with this project must be made on the basis of the best possible information, not on pork barrel analyses of the past. It is time for change and a new approach to the management of this magnificent part of our natural heritage."

The IWLA is a national conservation organization with a long history of action on environmental threats to the extensive fish and wildlife habitat of the Upper Mississippi and Illinois Rivers. They are the group who took the initial stand against expanded navigation capacity on the Upper Miss in the early 1920’s. It was their work that resulted in creation of the extensive Upper Mississippi River National Wildlife and Fish Refuge. Their interest in the 1920’s was to protect the spawning grounds of northern pike and smallmouth bass.

An updated list of environmental groups signing on to this statement, or a list of state agency contacts, are available at the IWLA Midwest Office (612) 922-1608.

Tow Fined For Dumping Sewage

The American Milling Company of Alton, IL, owner of the towboat "Eastern", has agreed to pay more than $98,000 for dumping sewage into the Upper Mississippi River. Coast Guard Officials, inspecting the tow after it collided with the I-80 bridge near LeClaire, IA, found that one of the boat’s toilets was discharging directly into the river instead of into a holding tank as required by law. The tow captain testified that he was not aware of the problem.

Source: The UMRCC News Letter, November/December 1992.

Towboats Collide on the Mississippi

The Associated Press reported (12-24-92) that two towboats collided on the Mississippi River near Cape Girardeau on December 22nd, scattering 20 barges and spilling up to 700 tons of liquid fertilizer.

The river channel was closed until one barge, which had sunk, could be located. The Coast Guard told downstream municipalities from Cape Girardeau to Paducah, KY, to close water intakes as a precaution.

The head-on collision between the Merlin Banta and the Ralph Plagge ripped a 50-foot hole into the side of the barge carrying ammonium nitrate, a liquid fertilizer, and sank another barge loaded with scrap metal, the Coast Guard said.

The collision happened about 13 miles north of Cape Girardeau shortly before midnight. Chief Petty Officer Larry Lawrence of the Coast Guard said a three-mile section of the river had to be temporarily closed to traffic.

Chuck Brutlag, a spokesman for the Illinois Environmental Protection Agency, said state officials were aware of the spill but because the fertilizer dissolves in water, there was no way to recover the chemical. He said ammonium nitrate could be toxic to aquatic life.

Lawrence said the cause of the accident was under investigation. The Merlin Banta, owned by Plaquemine Towing Corp. of Sunshine, La., was heading up river pushing four barges and the Ralph Plagge, owned by Midland Enterprises Inc. of Cincinnati, was pushing down river with 19 barges when the collision occurred.

Source: Kansas City Star, 12-24-92

Izaak Walton League of America Calls for Double-hulled Barges on the Upper Mississippi

Nearly 4 billion gallons of oil, petroleum products, fertilizer, jet fuel, asphalt, chemicals, and other hazardous chemicals are transported each year on barges along the Upper Mississippi River (UMR) alone. This is nearly 160 times the amount spilled recently in the northern British Isles, Shetland Island incident. Based on U.S. Coast Guard records, the Izaak Walton League of America (IWLA) estimates 20 percent of the hazardous materials hauled on the UMR are hauled in single-hulled barges.

The IWLA is moving to force single-hulled barges off the Upper Mississippi according to IWLA Midwest Regional Representative Paul Hansen. Hansen will soon ask lawmakers in Iowa, Illinois, Wisconsin and Minnesota to back a bill that would require new state permits and fees for barges using the Mississippi and Illinois rivers.

"Fees for single-hull barges would be twice the amount for the double-hulled models, which cut the likelihood of a spill by 50 percent," Hansen said.

"The money would be used to pay for spill cleanups, and possibly for grants or loans for companies willing to switch immediately to double-hulled barges", Hansen said.

A federal law passed after the Exxon Valdez spill off Alaska bans the use of single-hulled models after the year 2015; new barges have to have two hulls. Hansen said the law also allows states to charge fees and require permits that would allow them to check the safety of the barges.

However, Paul Werner of The American Waterways Operators, a barge-industry group, says the bill would duplicate the work of the U.S. Coast Guard, which already heavily regulates barges. Federal fees already are used to finance cleanups, he added, and much of the most hazardous material is already carried in double-hulled barges.

He said the industry's record is good, with 40 spills totaling 4,200 gallons from 1981 to 1990 in the upper Mississippi refuge. Of the 40 spills, nine were related to hull problems. The fees could lead firms to shift cargo to trucks and railroads, which spill more than barges, he said.

The single hulls vary in thickness from three-eighths to 1.5 inches, Werner said. In a double hull, the two layers are separated by two to four feet at various points.

Hansen says the barge group's study of 40 spills did not include all of the river. He adds that tows carrying one million gallons of hazardous materials are common in Iowa. "There is nowhere else in the United States where this much hazardous cargo is allowed to be transported in single-hull barges through such wildlife-rich lands."

The single-hulled barges threaten public water supplies as well as recreation, Hansen said. Also, "The wrong toxin could wipe out most of the canvasback ducks as well as kill fish and cause other problems", he said.

Hansen said the upper Mississippi and Illinois rivers include about 236,000 acres of national wildlife refuge and more than 60 state conservation areas that are used by roughly 40 percent of the nation's migratory waterfowl in the spring and fall.

Hansen said U.S. Fish and Wildlife Service officials have said it would be "basically impossible" to clean up a spill in the swift-moving Mississippi and its shallow, ecologically productive backwaters.

A new study by the Congress-formed Towing Safety Advisory Committee of both the Upper Mississippi and the Mark Twain refuges found 97 hazardous cargo spills from 1981 to 1990. Sixteen spills totaling 7,000 gallons were related to hull problems on either single- or double-hulled barges, but the group said double hulls would have helped in fewer than 1 percent of the incidents.

A study conducted by the Illinois Department of Energy and Natural Resources documented 371 spills of hazardous materials in the Mississippi River bordering that state between 1974 and 1989. Most of these spills occurred near East St. Louis.

Source: Des Moines Register, 1-16-93, and The Leader (Davenport, IA), 12-23-92.

Missouri River Recreation Update

Last month "*River Crossings*" included an article entitled, "Missouri River Recreation (in Nebraska?)". Larry Hesse, Nebraska Game and Parks Commission biologist, wrote us and asked that the following clarification be printed in this issue. We're more than happy to do so:

"I am writing this to clarify a few points made in Volume 1 (6) of *River Crossings*. We have continued to work with the 1992 recreational use data for the Missouri River along Nebraska and we have some updated values to share. The study covered 385 miles of river and the value has been increased from the original draft report to between $35.5 and $51.7 million dollars annually. It is important to point out that these are not expenditure dollars but National Economic Development (NED) value calculated with unit-day value estimates derived by the Corps of Engineers. We reported actual expenditures to be $380 million, which is nearly double that reported for the upper Mississippi along eastern Iowa if those figures are also truly expenditure data (I haven't seen the report).

'As for whether Nebraska's data is accurate or not: the 75% probability level confidence interval around our total man-hour estimate of 11.6 million for May through August was plus or minus 14%. This represents a measure of accuracy.

'I am sure the upper Mississippi is or was a very lovely place. However, I must take exception with the statement in *River Crossings* 1 (6) "It is doubtful that the Missouri River could ever achieve the status of the Upper Mississippi." If recreational use is an indicator its already surpassed it. The Missouri along Nebraska is in deplorable condition. We have historical data which suggests that a whole group of native fish needs to be reviewed for state listing including flathead chub, silver chub, sicklefin chub, sturgeon chub, plains minnow, western silvery minnow, burbot, sauger, blue catfish, flathead catfish, blue sucker, shortnose gar, longnose gar, paddlefish, shovelnose sturgeon, and lake sturgeon as a starter.

'During 1992 only 106 sauger were caught in the tailwaters of Gavins Point Dam, while in 1962, 284,156 sauger were caught in the tailwater only several years after the dam was closed. In the winter of 1958, before the Missouri was channelized north of Omaha, the ice fishing catch rate was 1.7 fish per hour; 64% were sauger, 24% were crappie and 12% were largemouth bass.

'Imagine the recreational use today with fishing of that magnitude. I found the following quote in the Yankton, SD newspaper published 5 August 1862: 'Katphish of fabulous dimensions are being taken from the placid waters of the 'Big Mo' about these times. A great many of them weigh two and three hundred pounds!'

The Missouri River may have been the 'junk yard dog' of rivers in North America; it was wild, it was full of dirt, it was full of snags, apparently it was full of fish as well. Being a bit of a junk yard dog myself, I choose to believe the Missouri River has 'status'."

We agree with you Larry, and apologize if our comparisons between the Upper Mississippi and Missouri River seemed to put a negative light on the "Big Muddy".

For further details contact: Larry W. Hesse, Nebraska Game and Parks Commission, Norfolk, NE 68701-0934, (402) 370-3374.

Restoring Native Fisheries in the Missouri River (a project using organic waste)

The Missouri River has changed dramatically during the 20th Century. According to a Nebraska Game and Parks Commission project brochure, "...these changes have been wrought by some 75 dams built on the river's mainstem and tributaries to control flooding and provide for commercial navigation. Historically, immense spring floods ’worked’ the banks of this once wild river, eroding its banks and felling huge cottonwoods and carrying a diversity of smaller herbs and grasses into its waters.

’Plants constantly fell into the river, and we know now that this was an essential process. Rivers like the Missouri depended on plants living along its floodplain as a source of carbon, nitrogen, phosphorous and other essential elements. Carbon, in fact, is the basic element in all living organisms. Unlike lakes which usually have high populations of rooted aquatic plants and microscopic plants, called phytoplankton, rivers often depend on their lateral relationship with floodplain terrestrial plants to obtain nutrients.

’The Missouri River fish community has declined 80% from the level it was in 1940. The Big Mo was home to 156 species of native fish, including some that grew to immense size. Blue catfish, flathead catfish, channel catfish, paddlefish, lake sturgeon, pallid sturgeon, bigmouth buffalo, smallmouth buffalo, blue sucker and several types of gar were often huge. Some were known to exceed 300 pounds in weight. This immense biomass of fish was directly related to the availability of plant production on the floodplain. When damming stopped the major floods, and channelization prevented the river from meandering, the link was severed between the food chain of fish communities with the sun’s energy stored in the carbon bonds of floodplain plant communities.

’For 40 years regulations have prohibited putting organic materials in our rivers because of the fear of water pollution and concern about impeding navigation. However, today biologists believe efforts went too far. These earlier actions inadvertently contributed to the reduction of valuable fisheries and had a negative impact on the entire ecosystem.

’It is possible to correct some of this loss without restoring the largest and most destructive flooding. Communities along the river produce an abundance of grass, leaves, and trees that are currently disposed of in our overflowing landfills. There is a better way to dispose of these organic materials. " Game and Parks Commission fisheries managers are proposing a three year (1993-95) pilot project to shred and place this material in the Missouri River where aquatic communities can utilize it and flourish as additional carbon and nutrients become available.

’In addition, large storm-damaged trees would be used whole, where they are available. These trees would have to be 18 inches minimum diameter at breast height, multiple branched, and 40 feet long to be placed in the river to restore in-stream habitat. The Missouri once had millions of large trees in the channels. They were essential habitat for fish and fish food organisms, which included mayflies and caddisflies."

According to Gene Zuerlein, Nebraska Assistant Fisheries Chief, "There seems to be a lot of light bulbs going on around here, especially with organizations who view this as one method to help prolong the life of landfills. We view the tree snags as one source of carbon, places for macro-invertebrates to colonize, and of course a lot of fish habitat."

Nebraska’s brochure recognizes that "There are concerns with the project. People use chemicals on their lawns, and chemically contaminated material cannot be accepted for river restoration work. Large snags in the river channel will necessitate careful boating to avoid damage and injury. Water clarity will decrease somewhat, as organic matter is restored.

’However, the quality of river water may actually improve because organic matter will help bind up some contaminants already dissolved in the river. More importantly, biologist believe that without this project the future of native Missouri River fishes is bleak indeed and will impact on human use of this valuable natural, renewable resource.

’This program requires people to review their thinking about how large rivers in the Great Plains function. There will be setbacks along the road to recovery of this unique and valuable resource. Competing users will have to find ways to share the river, if the needs of native fish communities are to be met."

State and federal agencies working with the Nebraska Game and Parks Commission to develop this pilot project include: Nebraska Department of Environmental Quality, Nebraska Natural Resources Districts, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and the National Park Service.

Several things have been said about the project by both its supporters and critics. "It is new, it is innovative, and it is somewhat controversial." Not all biologists in the states bordering the Missouri River agree with Nebraska biologists. Also some utility, water supply, and water intake managers have expressed concern about the project. But as Nebraska's brochure concludes it is "Time to Give Back".

"Missouri Basin settlers depended on this great river for food, fuel, and transportation. The river gave freely, it's time to give something back. If this pilot project is successful, it potentially could be applied to other mainstem tributaries such as the Platte, Elkhorn, Niobrara, Big Nemaha, the Loups, and other important tributaries in Nebraska and adjacent states."

More information on the project can be obtained by contacting Larry Hesse, Project Leader, District III, Nebraska Game and Parks Commission, P.O. Box 934, Norfolk, NE 68702-0934, (402) 370-3374.

Where Have All the Upper Mississippi River Bass Gone?

According to a January 17th article in the Quad-City Times (Davenport, IA), the most frequent question bass fishermen along the Iowa reach of the Upper Mississippi have been asking about the 1992 angling season is, "Where have all the bass gone?"

Iowa and Illinois biologists respond by telling fishermen not to blame size limits, weather, moon phases or sunspots for poor fishing. They say, "It's simpler -- and more complex-- than that."

"A natural system like this has some fluctuations in numbers," said John Pitlo, a fisheries biologist for the Iowa Department of Natural Resources (DNR) who has studied Mississippi River bass for the past decade. "There are normal ups and downs in the system."

He and Tom Boland, another Iowa DNR fisheries biologist, believe that the shortage of bass last year was due to non-specific environmental conditions. Electroshocking collections in Brown's Lake (a backwater near Bellevue, Iowa) were down 40 per-cent from 1991, for example. But there were fewer of all sizes of fish, suggesting there is not just a shortage of keepers 14 inches long or longer.

Some fishermen spoiled by great fishing in 1988 and 1989 may have forgotten how mediocre river fishing was before that, Pitlo suggested. Record droughts those years concentrated the fish and made good fishing easy. During the drought years, electroshocking collections were up 50 percent from 1987.

Some fishermen think that length limits on bass may be to blame. Others suggest that fishing should be prohibited during the spawning season, when bass are on their nests and easier to catch.

But Dan Sallee, biologist with the Illinois Department of Conservation, told members of Quad-City In-Fisherman earlier this month that fishing limits during the spawn historically have not helped fish populations.

Another short-term factor is water availability. In drought years, bass have fewer spawning areas and produce fewer young, Sallee said.

Iowa biologist John Pitlo used radio telemetry equipment this summer to track the movements of largemouth bass. According to Pitlo, over wintering habitat seems to be the limiting factor for bass populations. "Habitat is the critical, long-term factor for bass and many other fish species, he said, but winter habitat may be the most vital of all".

Pitlo's studies of transmitter-tagged bass have shown that the largemouth will travel nearly 10 miles to over-wintering sites, and few adequate sites remain.

These sites are in backwater areas where there is no current, and deep holes with plenty of oxygen. "More than 5,000 bass may spend the winter nestled in these 30- to 100-acre areas", he said.

Bluegills, crappies and other members of the sunfish family also congregate there. He wouldn't reveal their locations for obvious reasons. "These over-wintering sites are silting in, due to sedimentation from the lock and dam system", he said.

"Fish are no different than pheasants and quail," Pitlo said. "They need cover. We need to do something drastic...We need to restore our backwater lakes. Habitat is the bottom line."

"Bass, bluegill and crappie populations will decline if backwaters continue to fill with sediment", Pitlo said. Those areas are reaching the critical stage.

According to Tom Boland, efforts are under way to get more funding for habitat improvements, such as the recently constructed $1.6 million restoration project at Brown's Lake. Spring Lake near Savanna, IL, another backwater area, is slated for a $5 million rehabilitation.

Pitlo and Boland said they are puzzled that the U.S. Army Corps of Engineers can get funding for navigation work, and now is considering a plan to expand some of the locks and dams, while conservation projects struggle for financial aid.

However, the Upper Mississippi River currently does have a $200 million Environmental Management Program (EMP) being funded by Congress through the Corps of Engineers to collect scientific data, and to develop habitat improvement projects such as described by Pitlo and Boland.

But fisheries biologists have been frustrated in getting fisheries projects funded through the EMP, even though it was largely justified by fisheries needs identified in the the Upper Mississippi River Master Plan, developed by state and federal agencies between 1978 and 1981.

Part of this frustration has been caused by the fact that, federal cost-sharing formulas (imposed by the Reagan Administration) have caused most EMP projects to be constructed on National Wildlife Refuge lands. Any time a project has been built on federal refuges it has had to meet refuge objectives, which place the highest priority on the needs of waterfowl (i.e. shallow or moist soil habitats). Unfortunately fish do not survive the winter well in shallow water and moist soils!

Many of our nation's rivers are facing similar backwater habitat loss. This is especially true for those which support slackwater navigation projects. Improved backwater management is essential in all of these rivers if we hope to maintain quality fisheries.

Since fisheries management has not been compatible with management for waterfowl, traditional wildlife refuges have not proven very useful in maintaining viable fishery habitats. Many fisheries biologists have thus begun to consider the need for establishment of some kind of riverine fisheries management or refuge system. This concept may be the only way we can hope to save our native riverine fishes. Such a system could also provide enhanced fishing, which is often discouraged by waterfowl managers.

The Fish and Wildlife Service's Enhancement Office in Bismarck, ND has announced that the sturgeon chub, sicklefin chub, and blue sucker are currently under review, and may soon be listed on the federally threatened and endangered fish list. As more and more fish species become threatened or endangered, a national fish refuge system may be the only reasonable alternative available to save these and other endangered and threatened fish species.

Major Hydropower Deal Made With Michigan Utility

In late November the Michigan Department of Natural Resources and several other resource agencies signed an agreement with Consumers Power Company, the state's largest hydroelectric supplier, limiting harmful operations of dams on trout streams.

The agreement is the result of several years of negotiations and has been signed by both the U.S. Forest Service and U.S. Fish and Wildlife Service, but is awaiting approval of the Federal Energy Regulatory Commission (FERC).

FERC currently is considering applications to relicense Consumers' dams and about two dozen other Michigan hydropower dams. This is the first time these licenses have come up for renewal since the dams were built more than 80 years ago.

If approved, the agreed to restrictions would remain in force for the life of the 30-year licenses. The agreement requires:

- Contributions of up to $17.25 million to the state fund for restoring fish habitat and improving water quality.

- Payment of $5 million to design and build protection devices to minimize loss of fish in dams.

- Construction of $2.5 million worth of new or upgraded recreational facilities along the rivers.

- Dedication of $3.25 million to stabilize stream and reservoir banks, control soil erosion and gauge streams.

- Funding of $1 million worth of land management planning for each river with attention to recreation, endangered and sensitive species, wildlife and habitat, forestry management, historic and archeological resources, and access for handicapped and disabled people.

- Reimbursement of up to $100,000 a year to the state for monitoring compliance.

- Allocation of $750,000 to remove Stronach Dam and restore Pine River banks if removal of the dam proves advisable.

- Reimbursement of up to $315,000 to state and federal agencies annually for operating and maintaining public campgrounds, tourist sites, launches and other recreational facilities on Consumers Power land.

- Installation of fish ladders if and when they are called for by state and federal fisheries agencies.

- Modification of dam operations to minimize impact on riverbanks, fish and spawning areas.

- Payment for any natural resource damage caused by failing to comply with state water quality limits.

- Establishment of a trust fund for each dam to assure proper management if the dam is taken out of service.

- Monitoring of water and sediment quality every five years.

According to Rich Greenwood, the biologist who handled the agreement for the U.S. Fish and Wildlife Service, "This is going to set the precedent for lots of hydro projects, not just in Michigan, but throughout the Great Lakes and the whole nation."

Environmental groups have praised the utility for coming to terms with the state and federal regulators after only a year of negotiations. However, some fear that the agreement may not be approved by FERC because of its national ramifications. So most folks are taking a wait and see attitude until that decision is known.

Source: Flint Journal, 11-26-92, Kalamazoo Gazette, 11-26-92, and Lansing State Journal, 11-29-92.

Stemming the Spread of the Zebra Mussel

State and federal biologists are working on a plan to stop, or at least slow the spread of zebra mussels on the upper St. Croix River. The St. Croix is a national wild and scenic river, tributary to the Mississippi, and forms the shared border between Minnesota and Wisconsin, above its confluence with the Mississippi.

Besides being of National importance as a wild and scenic river, it also supports some 28 species of freshwater mussels, several of which are rare or endangered. The lower reach of the St. Croix is also commercially navigable, supporting one small barge terminal.

The zebra mussel control plan being developed jointly by National Park Service, U.S. Fish & Wildlife Service, Minnesota and Wisconsin biologists is intended to educate boaters against spreading the mussels into the wild and scenic portion of the river by attaching themselves to fishermen's boats.

According to an Associated Press article in the Saint Paul Pioneer Press, publicity will begin to appear in April before the boating season begins. Tom Lovejoy, Wisconsin Department of Natural Resources biologist was quoted as saying that "biologists also want to develop a long-term plan that may eventually require some restrictions on navigation". Lovejoy said that for now boaters and fishermen will be told ways to prevent transporting the mussels, such as cleaning boat hulls and draining bait buckets. However, he added, "I don't think any of the agency people feel that ultimately we're going to keep the zebra mussel from the St. Croix, but let's slow it down as long as we can."

Paul Burke, a U.S. Fish & Wildlife Service biologist, told "*River Crossings*" that just slowing down the spread of zebra mussels will be enough success to make the effort worth while. He added that at least one local power company has expressed interest in making their heated effluent waters available to spray down boats after leaving the lower St. Croix and heading upstream by trailer in hopes the hot water will kill any attached mussels. Small boats have to be trailered, or transported by other means to reach upstream pools.

A major problem with implementing the plan, according to Burke, however, is finding adequate funding to print informational brochures, to provide manpower necessary for educational efforts, and to man inspection and control stations, etc.

Federal and state resource agencies are, of course, reluctant to use scarce resource management funds to correct the zebra mussel problem; especially since it was caused by users who already compete with their interests (i.e. the commercial navigation industry).

It is widely accepted that the mussel reached the U.S. via deep draft commercial vessels which filled their ballast tanks with contaminated water in Europe, and then after their trans-Atlantic trip, emptied the contaminated bilge water into the Great Lakes.

The zebra mussel reached the Mississippi River by way of the Sanitary and Ship canal connecting Lake Michigan with the Illinois River, either attached to barges and large recreational vessels, or simply by riding downstream currents. Once in the Illinois River, it was a simple matter for the zebra mussel to continue drifting downstream to the Mississippi, or to travel by way of attachment to commercial barge hulls and large recreational craft transiting the system. Fish and Wildlife Service biologists recently reported finding adult zebra mussels attached to riverine habitat as far downstream as Vicksburg, MS.

However, transport upstream in the Mississippi created a more significant challenge for the zebra mussel. It might have been years before the mussel could have traveled the some 600 miles upstream from the Illinois/ Mississippi River confluence to the St. Croix if it had to rely on natural means or attaching itself to the few recreational craft which travel the entire distance upstream.

However, the regular movement of commercial barges made the task easy, and the zebra mussel was carried to the very doorstep of the St. Croix as well as to all the Mississippi River tributaries in record time. Several hundred were found attached to barge hulls at a barge cleaning facility in St. Paul last summer (upstream from the Mississippi's confluence with the St. Croix).

As such, this is a classic example of the systemic impacts of navigation traffic, an issue which Upper Mississippi River biologists have been wrestling with since the mid 1970's when Congress funded development of an Upper Mississippi River Master Plan (See related articles on navigation concerns in this issue of *River Crossings*).

This being the case, it seems that St. Croix River biologists should look no further than the Corps of Engineers and the towing industry for the funds to pay for measures which might be used to "stem the spread" of the zebra mussel.

Certainly, the economic burden of zebra mussel control should not fall to the fishermen, hunters, boaters, recreationists, and mussel industry who are being impacted by the zebra mussel invasion.

It will be interesting to watch this issue play out on the St. Croix and elsewhere.

In the meantime, reports have been coming in that a close relative of the zebra mussel, the *quagga mussel* has appeared in the Great Lakes, also presumably as a stowaway, hitching a ride in the bilge water of trans-Atlantic ships.

Similar in appearance and habits to the zebra mussel, the question now is, "How long will it be before the new invader finds its way to entire Great Lakes System and to the nation's rivers?."

Persons interested in more information can contact Paul Burke at U.S. Fish & Wildlife Service, 4101 E. 80th St., Bloomington, MN 55425-1665, (612) 290-3131.

Documenting the Spread of Exotic Species

Bill Bertrand, Illinois Department of Conservation and past committee chairman of the American Fisheries Society, North Central Division Rivers and Streams Committee (RSC) has proposed that the RSC begin to document the spread of exotic species in rivers and streams of the north central states.

Bertrand says that experience tells him that specimens of exotic species collected by field biologists are not necessarily reported to anyone other than in casual conversation, or they are reported to someone who is not further "spreading the word".

Bertrand is requesting that RSC members report their and their colleague's exotic species collections to the RSC Chairman. The Chairman would then assemble the information into visuals such as range maps which might be passed on to members at meetings or to others by special request. Bertrand's concerns include all aquatic species being introduced accidentally such as the zebra mussel, but also species being introduced by a growing aquaculture industry and its impact on the genetic integrity of existing fish stocks.

Bertrand said, "This would put all of us a 'step ahead' in 1) being aware that the exotic may show up in our river samples; 2) sounding the alarm in our own agencies about the presence of the exotic in our systems; and 3) initiating discussion on what (if any) action can be taken to slow the progress of the new exotic." Bertrand is calling for pertinent information such as number of individuals, size, location and date of collection.

As implementation of MICRA proceeds we hope to work with the RSC and others to document similar records for the entire Mississippi River Basin.

Boat User Fee Repealed

Boaters will have a little extra money to fill their fuel tanks this summer thanks to repeal of the boat user fee that was implemented a year ago. The fee system, administered by the Coast Guard, required that power boats display a use sticker costing from $25 to $100.

Repeal of the requirement will be phased in over the next two years. Boats under 21 feet in length were exempt as of October 1, boats under 37 feet will be exempt October 1, 1993, and all other boats will be exempt after October 1, 1994.

Table 1. Survey of "River Crossings" Circulation, Vol. 1, No. 6, November/December 1992.

Geographic Destination	SA	FA	NA	UC	IG	CU	PE	PG	EG	PC	CO	TOTAL
Alabama	1	1	1	1			2	1				7
Arkansas	6			1			1	2	1	2		13
California									2			2
Colorado	2	7	1	2				1				13
Connecticut	1											1
District of Columbia		12		1	3		5		6		2	29
Florida		2							1	1		4
Georgia	1	4		1				2	2			10
Illinois	7	4		2	1	1	4	3	8	2		32
Indiana	6							2	1			9
Iowa	10	1	1	2				2	4	1		21
Kansas	8	3	4	2				1	1			19
Kentucky	7	1		1			1	2	3			15
Louisiana	10	2	2	1		2		2	3	1		23
Maryland		1		1	2			3				7
Massachusetts							1					1
Michigan		1				1		2				4
Minnesota	10	8	9	1	2	4	4	2	3	1		44
Mississippi	2	7	1	3	1			2	1	1		18
Missouri	16	7	1	3		1	3	1	7	2		41
Montana	6	6	7	1	1			2				23
Nebraska	5	4	2				1	2				14
New Mexico	2	3										5
New York	2	1	1					2		1		7
North Carolina	1	1	1	1			2	3				9
North Dakota	3	3	2	2			1					11
Ohio	3	1		2	1			2		1		10
Oklahoma	2	2	33	3			1	1				42
Oregon					1				1			2
Pennsylvania	1	1		2				2				6
South Carolina							1					1
South Oakota	5	1	9	1	1			3				20
Tennessee	1	4					2	2	4	1		14
Texas	3	4		2			1	1				11
Virginia	3	3						3	4			13
Washington	1						4					5
West Virginia	4			1								5
Wisconsin	4	13	8	4	1		3	1	5	2		41
Wyoming	5	1	2	1				1				10
Toronto, Ontario	1											1
Vancouver, B.C.	1											1
United Kingdom						1						1
TOTAL	140	109	85	42	14	10	37	53	57	16	2	565

Affiliation of Recipient *

* SA=State Agency, FA=Federal Agency, NA=Native American Group, UC=Utility Company, IG=Interagency Group, CU=College/University, PE=Private Enterprise, PG=Professional Group, EG=Environmental Group, PC=Private Citizen, CO=Congressional Office

River Crossings' Circulation Survey

We thought our readers would enjoy reviewing the circulation list we compiled for our reader survey, so we are printing it in this, our first anniversary issue (Table 1). It lists readers by affiliation and geographic location.

As you can see, the bulk of our mailing goes to representatives of State and Federal agencies, followed by Native American Tribes, environmental groups, professional groups, utility companies, and private enterprise interests, respectively.

Now that you know who our audience is, we encourage you to submit articles and ideas to *River Crossings* to enhance the cross-basin communications we hope to develop and maintain!

Meetings of Interest

Third International Zebra Mussel Conference - February 23-26, 1993, Westin Harbour Castle Hotel, Toronto, Ont. For further information contact: Chris Brousseau, Ontario Ministry of Natural Resources, (416) 832-7113.

UMRCC 49th Annual Meeting - March 9-11, 1993, Chestnut Mountain Ski Resort, Galena, IL. For more information contact: Dan Sallee, ILDOC, (309) 582-5611.

Riparian Ecosystems in the Humid U.S. - Functions, Values, and Management - March 15-18, 1993, Sheraton Colony Square, Atlanta, GA. For more information contact: Beverly Ethridge, USEPA, Region VI, (214) 655-2263.

MRNRC Spring Meeting - March 18-19, 1993, Airport Hilton, Minneapolis, MN. For more information contact: Kent Keenlyne, USFWS, Missouri River Natural Resources Committee, (605) 224-8693.

Watershed '93: A National Conference on Watershed Management - March 21-24, 1993, Radisson Plaza Hotel, Alexandria, Virginia. For more information contact: Jennifer Paugh, Terrene Institute (202) 833-8317.

Mississippi River Research Consortium - April 22-23, 1993, Holiday Inn, LaCrosse, WI.

MANDATORY READER SURVEY

MICRA

Mississippi Interstate Cooperative Resource Agreement

608 East Cherry - Columbia, Missouri 65201 - (314) 876-1911

This survey is being conducted to identify regular *River Crossings* readers who wish to remain on our mailing list. Unless you respond to this questionnaire, your named may be dropped from our mailing list! We will be pleased to keep sending you the newsletter, if you find it useful. But if you do not respond, we will assume that it is not being read, and we will take your name off our list to reduce publication costs and to "save the trees!. Thank you for your cooperation, we look forward to hearing from you.

Name ______________________________________

Address ____________________________________

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________ I like the format of the Newsletter, please keep sending it to me.

________ I think the Newsletter could be improved, here are my suggested changes:

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________ I recommend sending copies of the Newsletter to the following persons/groups:

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Additional Comments:

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Fish and Wildlife Service
Fish and Wildlife Enhancement
Columbia Field Office
608 East Cherry Street
Columbia, Missouri 65201

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Volume 2 March/April 1993 Number 2

Watershed '93

Over 1000 people from all over the country gathered in Alexandria, VA on March 21-24 to discuss watershed management, past and present issues and activities; and to find potential solutions and actions to improve the country's watersheds. A paper describing MICRA's goals was prepared and presented by Jerry Rasmussen, MICRA Coordinator/ Executive Secretary.

Sub-group breakout sessions and wrap-up group discussions (which included a satellite hook-up with remote locations throughout the country) were held at the end of the four-day event. These discussions stressed the following points and actions needed to improve watershed protection and management:

- We must allow our watersheds room to "breathe". This comment made by Bill Frank, Jr., Chair, Northwest Indian Fisheries, Olympia, WA, essentially means that we must take a holistic approach to watershed management, setting realistic limits on land use, development, and growth which addresses watershed capabilities and attempts to balance development with environmental protection interests.

- We need to promote individual lifestyle changes which focus more on walking, bicycling, and mass transportation rather than on use of the traditional internal combustion engine.

- We must educate the public, especially the young, to the holistic nature of our environment and the importance and need for being good land stewards.

- We must promote the economics of good watershed management, and find ways to demonstrate that good watershed management will generate profits for landowners.

- We must establish and maintain good national leadership for watershed management.

- We must be flexible and promote techniques and methods which "work", whether they be bottoms up or top down approaches.

- We must promote and develop the "political will", at all levels of government, necessary to make the hard choices and decisions needed

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to improve watershed management.

- We need to develop better methods and techniques of collecting and sharing information and scientific data.

- Private property rights must be respected, but private interests must recognize their public responsibilities to the maintenance of environmental quality.

- We must develop better mechanisms to coordinate watershed management.

- We must find new ways to address and promote "appropriate" land use.

- We need to encourage decision makers to visit our watersheds in order to learn more about them through "hands on" and "on site" experiences.

- Development projects must be evaluated for their long term impacts (longer than in the past).

- We should begin thinking in terms of identifying the human "carrying capacity" of our watersheds, and set limits on population growth.

- We must take actions to better control growth and urban sprawl.

- We must develop and set national goals for watershed management, with achievable milestones to mark progress.

- We should establish a 900 number for watershed coordination and information; the proceeds of which could be used to finance watershed protection projects and promotional activities.

- We need to make better use of existing programs (i.e. farm program, P.L. 566 program, etc.) to improve our watersheds.

- A national watershed forum is needed.

- We need a constitutional amendment which guarantees everyone the right to a clean environment.

River Crossings

Published by

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608 East Cherry
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River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

- We need to work to change our present culture from one which is based on materialism and consumerism to one which takes a more "spiritual" approach toward land use and protection.

- We must find ways to factor out agency and interagency "turf battles" which are currently preventing positive action.

- We must work to "re-invent" government in order to re-establish a public "faith" that government can and will make positive change.

Carol Browner, Administrator of the EPA, addressed the group at the closing session and assured conference attendees that the Clinton Administration is committed to improving environmental protection. She said that she, along with the Agriculture and Interior secretaries, are committed to improved coordination, sharing of information, and working together to improve government efficiency.

Jimmie Powell, Staff Member of the Senate Committee on Environment and Public Works, informed the group that a new Clean Water Act will likely be developed in this Congress. He predicted hearings in May, a draft bill by summer, and markup of the bill by fall.

He also told the group that a new constitutional amendment to guarantee the right to a clean environment is not needed because our legal system is already built into that principal through "common law" practices.

He also said that action on the Endangered Species Act is overdue. He went on to say that the Act needs to be restructured in order to promote advance work to protect species before they become endangered. He said that Carol Browner of the EPA and Bruce Babbit of Interior are both supportive of this concept.

He said that the Mining Law will be addressed by this Congress, and will likely be amended to provide for improved protection of natural resources.

Vice President Al Gore was invited to attend the conference, but was unable to due to other commitments. Instead he sent a written message (See the next section of this newsletter).

All in all the conference was very supportive of MICRA's established goals and objectives, and the concepts we are promoting.

A concept worthy of mention which was promoted by some conference attendees, especially those from the Chesapeake Bay area, was to identify themselves by their "environmental address".

CHESAPEAKE BAY FOUNDATION • SAVE THE BAY •

The environmental address of the MICRA office is: *Hinkson Creek, tributary to Perche Creek, the Missouri River, the Mississippi River and the Gulf of Mexico*. Do you know your environmental address? If you don't, you probably should!

A Message From Vice President Al Gore

The following text was included in a letter sent to attendees of the "Watershed '93" conference held in Alexandria, VA on March 21-24:

"I commend all of you for your dedication to protecting our Nation's water resources. Great strides have been made in improving the health of the Nation's waters thanks to the efforts of many people around this country -- including many of you here today.

'However, as you all know, our waters are still in danger. Today's threats such as nonpoint source pollution and habitat degradation require new and creative solutions. With its holistic approach, watershed protection provides a means by which we can address and overcome the perils facing our waters.

'I realize that for many, watershed management represents a new way of thinking. This new approach will require major changes in your current methods of operation. Adopting this watershed protection approach will not always be easy and there will be obstacles to overcome. Rest assured that you will not be facing this challenge alone. As part of our economic stimulus package, President Clinton and I proposed $47 million for watershed protection efforts, including nonpoint source pollution controls and wetlands restoration.

'We are all keenly aware that our environmental efforts in the decade of the 90's must succeed. We must ensure that we leave to our children and grandchildren a healthy environment. Your attendance at this conference demonstrates that you are ready to take this challenge and make watershed protection work."

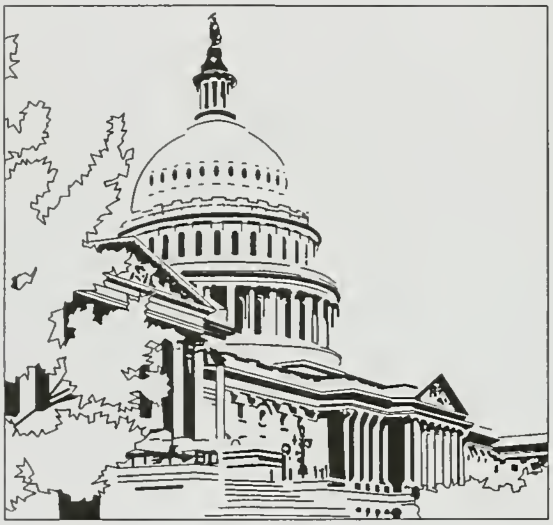
Legislative Perspectives on Watershed Management

The 58th North American Wildlife and Natural Resources Conference held a special session entitled "Watershed and Land Use and Fish Populations" on March 23 in Washington, D.C.

The panel of speakers included William Stelle of the House Merchant Marine and Fisheries Committee and Jeffery Peterson of the Senate Environment and Public Works Committee.

Peterson stated that the Senate will likely have a new Clean Water Act drafted by Spring, hold hearings this summer, and be ready for markup in the Fall. Stelle said that Congress will likely steer the Act toward the conservation of ecological health and provide a tremendous opportunity for the Fish and Wildlife Service and the States to provide meaningful input to the EPA.

Stelle said the forest conference which President Clinton conducts in early April in the Northwest bears watching because it will set the pace for the direction this Administration will likely take on watershed management.



Stelle also said that the next two months are very, very important for new program starts in the 103rd Congress. This is the Congress's reconciliation process, and generally a period when "what the White House wants, the White House gets!"

The next two months would therefore seem to be a critical period for contacting our Congressmen regarding gaining their support for the Interjurisdictional Rivers Bill.

Stelle also said that there will likely be a Department of the Environment Bill which, if passed, could produce significant restructuring of federal government agency roles, and elevate the Environmental Protection Agency to Cabinet level status.

Interjurisdictional Rivers Bill Update

The American Fisheries Society held a special legislative training session in Rockville, MD in late March. The purpose of the session was to provide members with training in legislative matters, and to develop members' talents in political lobbying techniques.

As part of the session, members teamed up and spent a day on Capitol Hill contacting various Congressmen to lobby for passage of the Interjurisdictional Rivers Bill, the Magnusson Act, and the Endangered Species Act.

The day on the "Hill" began with a Congressional Breakfast at the National Press Club to describe and promote the above mentioned legislation.

Ted Turner of Turner Broadcasting in Atlanta was the keynote speaker. Turner informed the group that he is willing to work with the AFS to develop educational programs on the plight of the nation's fisheries. We anticipate that at least one of these programs would address issues facing our rivers and their fishery resources.

Jerry Rasmussen, MICRA Coordinator/Executive Secretary, presented a summary of the Interjurisdictional Rivers Bill and MICRA.

At an afternoon meeting with Congressman Steve Gunderson (WI) the group was assured that the 1993 version of the Interjurisdictional Rivers Bill would be introduced as soon as Congress tackles the overall budget (hopefully within the next few days).

Nine of the fourteen Congressmen who signed on in support of the 1992 version of the Bill won re-election last fall. These include Jefferson (LA), Natcher (KY), Costello (IL), Ravenel (SC), Tauzin (LA), Peterson (MN), Baker (LA), Bereuter (NE), and McCrery (LA). It is hoped that all of these Congressman will support the bill again this year, but each should be contacted again by MICRA members from their respective states.

MICRA members are also urged to make contacts with all of their respective Congressmen to gain additional support for the bill.

The language of the bill remains largely the same as in 1992, except that Alaskan rivers will be excluded from the National Strategy, and a clause has been added to ensure that management responsibilities of effected states are not superseded by the National Strategy.

National Biological Survey and the Endangered Species Act?

Interior Secretary Bruce Babbitt has recently appointed Thomas E. Lovejoy, Smithsonian Institution Assistant Secretary for External Affairs, to be his scientific advisor. Babbitt reportedly asked Lovejoy to design a new science agency within

Interior to be called the National Biological Survey.

That new agency would combine the research functions of existing Interior Department agencies (Fish and Wildlife Service, Bureau of Land Management, Bureau of Reclamation, and National Park Service) under one new coordinated scientific function.

Babbitt would model the new agency after the U.S. Geological Survey founded in 1879 through cooperation of the Smithsonian and the National Academy of Sciences.

A primary task of the new agency would be to complete a kind of national biological map that Babbitt hopes will be a new more-active approach to dealing with endangered species. The secretary has said he wants to take a more comprehensive, ecosystem-based approach to preserving diversity rather than the single-species approach that has been used in the past.

The ecosystem mapping envisioned by Babbitt would serve as a kind of early warning system, allowing government to determine plant and animal species that could be heading for trouble and to take steps to protect habitat without serious economic dislocation.

Babbitt said the new biological survey "could be the best insurance policy against environmental and economic train wrecks." He said, "We need to step back and look at the entire ecosystem and ask, 'Is it possible to intervene before the crisis?'"

Such an approach, he said, might avoid "the downward spiral of listing, and then the long, contentious legal process that is triggered when the Endangered Species Act takes hold."

The theory is that both conservation and business interests can be better served by negotiated settlements that plan the future of an entire ecosystem before any individual species is endangered. There is more leeway for compromise, according this view, than when an ecosystem is severely degraded and options for protecting threatened species shrink.

Babbit said, "We're going to have to manage the Endangered Species Act pro-actively by anticipating the problem, while we still have the flexibility to manage it.

Source: New York Times (2-16-93) and Washington Post (3-14-93)

MICRA Funding

Kansas joined Illinois, Montana, and Minnesota in February by supporting MICRA through contribution of $1500 in annual dues.

Dues are used to pay for various MICRA activities such as meeting expenses, the newsletter, etc.

MICRA Paddlefish/Sturgeon Committee

The Paddlefish/Sturgeon Committee met in Columbia in February to begin drafting their Strategic Plan. States and Entities represented included TX, LA, AR, MO, KS, IA, NE, SD, MT, and FWS.

larval paddlefish

In a one-day session the group agreed to 7 major goals, 13 objectives, and 35 tasks. Goals include the following:

- Identify and prioritize issues of concern in the Mississippi River Basin for coordinated research that supports cooperative paddlefish and sturgeon management.
- Facilitate communication and coordination among entities responsible for paddlefish and sturgeon resource management in the Mississippi River Basin.
- Develop an information management program based on standardized methods for collecting and reporting paddlefish and sturgeon resources data, basin-wide.

larval sturgeon

- Identify and coordinate paddlefish and sturgeon research, management and recovery programs to address species and habitat concerns from an ecosystem perspective.
- Preserve, protect and restore paddlefish and sturgeon habitats basin-wide.
- Develop compatible regulations and policies for paddlefish and sturgeon to achieve interstate consensus on their conservation and management.
- Increase the public awareness and appreciation of the ecological and economic importance of paddlefish and sturgeon species and of the environmental and human-related impacts that threaten their welfare and continued existence.

The Committee's goals were developed to be consistent with MICRA's overall goals. They hope to complete a review draft of their Plan in April, gain Steering Committee approval in May, and begin implementation by summer.

Middle Mississippi River MICRA Project

MICRA will sponsor a meeting between Illinois, Missouri, Fish and Wildlife Service, and Corps of Engineers biologists and hydrologists in Collinsville, IL on April 9th to discuss fisheries management options for the Middle Mississippi River.

The Middle Mississippi is defined as the reach between the Mississippi's confluence with the Missouri River on the north and the Ohio River on the south.

For the past several years the St. Louis District Army Corps of Engineers (SLD) has been investigating new environmentally sensitive alternatives to maintenance of the Middle Mississippi River navigation channel.

One of the most common structures used to maintain a navigation channel in this reach is channel training dikes; most often constructed in series and referred to as dike fields. River biologists have often been critical of these structures because the aquatic habitat between the dikes quickly becomes covered with sediment and is lost.

Since 1972, SLD hydrologists have been experimenting with different types of dike modifications in an attempt to eliminate or reduce sedimentation between the dikes and thus enhance aquatic habitat. The general theory was that if notches were placed in the dikes, flow through the notch would keep suspended particles from settling out. In practice, scour holes, bars, small chutes and side channels have been formed that provide increased habitat diversity.
Biological studies indicate that diversity of macroinvertebrates was greater on notched dikes. This was true to a lesser degree for fish.

SLD hydrologists have also been experimenting with new ways to protect shoreline revetments. In the past, graded stone << A >> consisting of rocks up to 400 pounds in size was used. Some revetments are now being constructed using graded stone << C >> which includes rocks up to 5,000 pounds in size. The larger stone provides significantly more crevices and substrate variability than the smaller stone. Fisheries studies completed in 1982 and 1983 showed a significantly higher proportion of fish (by weight) from the large stone revetment.

Another modification to standard revetment techniques has been to move the revetment riverward, away from and parallel to the bank line. This eliminated the need to clear shoreline vegetation and has also proven more economical. A subsequent improvement in this off-bankline revetment design has been the creation of openings in the revetment. These opening have provided side channel-like environments between the revetment and the shoreline. Recent fisheries studies by the Illinois Department of Conservation show that off bankline revetments may support twice as many fish as conventional revetment.

The latest development in "environmentally sensitive" river control are "bendway weirs". These are submerged rock structures placed in the navigation channel on river bends characterized by high water velocities and narrow widths. Traditional revetment placed on the outside bend of a river meander made the channel more narrow and swift, a condition unfavorable both to navigation and aquatic life. Bendway weirs appear to offer a solution that will benefit both navigation and aquatic resources.

In 1990, 13 bendway weirs were installed at Dogtooth Bend, located approximately 160 miles south of St. Louis. A total of 220,000 tons of rock was used to build the 13 weirs at a cost of $1 million. Alignment of the weirs was critical to their success, so a satellite global positioning system was used to pin-point their location on the bend. Since the weirs are located in the navigation channel, a minimum of 15 feet of clearance was allowed between the weir top and any passing barges.

It is anticipated that the weirs will provide desirable substrate for invertebrate populations and forage fish. This, in turn, should attract larger fish such as the channel catfish, flathead catfish, striped bass, and sturgeon. Another major benefit of the weirs is that they will help isolate the "point bars" formed on the inside bends from land access by predators and humans. These point bars are critical for nesting of species such as the endangered Least Tern.

striped bass

flathead catfish

Ongoing monitoring of the biological and hydraulic parameters of these weirs should substantiate these predictions. A major problem still facing fishery biologists is how to effectively sample deep, swift water. Typically, such river bends are very "hostile" to sampling procedures. Another unknown is what effect tow passage will have.

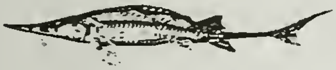
If any of our "*River Crossings*" readers have any suggestions on safe and effective methods of sampling these habitats, we'd appreciate hearing from you.

The MICRA-sponsored group meeting in Collinsville on April 9th hopes to reach consensus on Middle Mississippi River fisheries management goals and needs, and to make recommendations for further application of the SLD's recently developed hydraulic techniques to improve fishery habitat.

For more information on the channel maintenance work being done by the St. Louis District please contact Mr. Claude Strausser, Chief Potamology Section, Hydrologic and Hydraulics Branch, U.S. Army Engineer District, 1222 Spruce St., St. Louis, Missouri 63103-2833

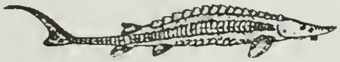
Pallid Sturgeon Genetics Update

Some 15,000 to 20,000 sturgeon hatched last year and held over winter at the Blind Pony State Fish Hatchery near Sweet Springs, MO may soon be destroyed because they are hybrid rather than true pallid sturgeon. The Pallid Sturgeon Recovery Team has recommended that stocking not occur at this time because of the questionable genetics of the Blind Pony fish.



pallid sturgeon

The proposed stocking plan was to widely disperse sturgeon juveniles in the Missouri and Mississippi rivers in Missouri, and possibly off-river reservoirs. The Recovery Team feels there is sufficiently reasonable doubt that one or more of the broodstock at Blind Pony was a pallid sturgeon X shovelnose sturgeon hybrid. The team maintains that stocking would be an irreversible action and not one that must be taken at this time to recover the species.



shovelnose sturgeon

Dr. Donald Morizott, under contract with the U.S. Army Corps of Engineers, conducted DNA testing on shovelnose and pallid sturgeon, attempting to identify species-specific polymorphisms for use in evaluation of the "purity" of the Blind Pony Hatchery sturgeons using allozyme analysis. Dr. Morizott concluded that the Blind Pony sturgeons may be pure pallids, but he could not assemble evidence to strongly support that conclusion.

Because the DNA studies are still underway, only morphological criteria are currently available to assess potential hybridization. A more extensive and detailed allozyme study with more localities and more sampled tissues will be required before conclusive evidence for genetic differentiation between the two species can be assembled. Dr. Morizott had only a small sample of fish and poor quality of samples with which to work.

Morphological characteristics of the Blind Pony pallid sturgeon progeny leave further doubt as to the broodstock's purity. As the juvenile pallid sturgeon grew some individuals began taking on characteristics of shovelnose sturgeon, others pallid sturgeon, while the majority took on characteristics of both species. Sturgeon juveniles may not show all the adult characteristics, but their appearance left further doubt as to their parentage.

The Recovery Team has recommended that Blind Pony retain up to 100 juveniles from each of the two lots until next summer, and eventually cut back to 20-30 each to serve as future broodstock, should DNA analysis planned for completion later this year prove them to be pure pallid sturgeon. The surplus juveniles will likely be offered for research and outreach as soon as possible. One research option might be to transfer juveniles to hatchery ponds where survivability under less costly holding conditions could be measured. If there is still a surplus, the remainder will likely be destroyed in a humane manner to free up hatchery space and eliminate further holding costs.

The Recovery Team feels that although the full recovery potential of last year's propagation activities could not be met with reintroduction, the propagation effort contributed enormously to recovery of the species. It was shown for the first time that pallid sturgeon can be spawned and reared in hatcheries. Feeding and density trials on the progeny also expanded our knowledge of rearing requirements and needs. Specimens were and can continue to be provided to aquariums for public viewing. Specimens were collected and are being drawn by a larval fish artist for a descriptive key of developing sturgeon. And ongoing studies are being conducted on tag retention in juveniles. Hybrid females were also shown to be fertile when known hybrids were spawned with pallid sturgeon males.

Despite the disappointing conclusion of last year's effort, the Recovery Team recommends that Missouri again attempt to spawn pallid sturgeon this year. It will be crucial to build on the successes of last year's spawning activities and continue to refine spawning techniques, develop broodstock, and research rearing requirements. Jerry Hamilton, Blind Pony Hatchery Manager, is highly regarded by the Team for his sturgeon spawning expertise and personal attention to rearing. The Team is hopeful that he and the Missouri Department of Conservation can continue to assist recovery efforts.

The Team is also recommending Herb Bollig at Gavins Point National Fish Hatchery in South Dakota spawn pallid sturgeon this spring. Production targets have been proposed by the Team and recently sent to participating hatcheries. Stocking is again not proposed. If this propagation is successful, the progeny would be dedicated for research, outreach, or broodstock, with surplus fish disposed of humanely within 60 days of hatching.

Water Quality Criteria for Fisheries and Aquatic Life

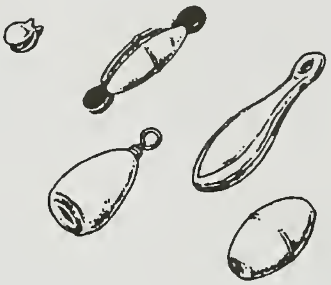
Traditional water quality standards at both state and national levels have almost always been set to reflect only the needs for human drinking water and water contact sports, with little recognition given to the ecological needs of aquatic organisms.

Amy Leaberry, a biologist with the EPA's Ecological Risk Assessment Branch, Office of Science and Technology in Washington, D.C. recently contacted the MICRA Coordinator regarding a project she is working on which may help change water quality regulations to reflect broader ecological needs.

Ms. Leaberry informed the Coordinator that she is in the process of developing new federal water quality criteria for fish and other aquatic organisms. After listening to the presentation on MICRA at the Watershed '93 conference, she felt that MICRA may provide the "natural" mechanism to coordinate state input from the entire Mississippi River Basin. She agreed to submit further information on her project, and we plan to publish it in the next issue of "*River Crossings*". This seems to be a tremendous opportunity for MICRA to provide significant input to this national process, and then to work to apply these guidelines to our respective states.

Are Lead Sinkers Poisoning Birds?

Mounting evidence suggests that lead fishing sinkers may be inadvertently poisoning waterfowl. Recent studies have confirmed that at least two northern-breeding species, the common loon and the trumpeter swan, are ingesting the sinkers and dying of lead poisoning.



It is very likely that species other than the loon and swan are also vulnerable. "Our view is this is the tip of the iceberg," said Bruce Manheim, a Washington-based attorney for the Environmental Defense Fund. "In the last couple of months, a Mississippi Sandhill Crane that had been released on a Mississippi reserve was found to have died after ingesting a lead sinker."

In Michigan, studies of dead loons at a research center near Lansing found that, between 1988 and 1992, 40% of the loons had died from lead intoxication. Similar studies at Tufts University in New England reported that 52% of dead adult loons there had died of lead poisoning after ingesting lead sinkers.

One reason for Manheim's concern is the very different feeding patterns of the birds dying of lead intoxication. Loons consume fish, while trumpeter swans forage around the bottom for food. The crane, meanwhile, feeds frequently on shores, beaches and rocky areas surrounding rivers and lakes. All of the birds, perhaps in different ways, ingested sinkers.

In response, the Environmental Defense Fund, along with the Federation of Fly Fishers, the North American Loon Fund, and the Trumpeter Swan Society are seeking a ban on lead sinkers in national parks and refuges in the 16 states where loons and trumpeter swans live.

Environmental groups have also asked the Environmental Protection Agency to require that lead sinkers carry warnings of their potential hazard. Although more than 1.6 million pounds of lead sinkers are sold in the United States each year, alternatives are available.

Non-toxic sinkers made of tin and brass are on the market that cost generally 20 to 30% more than traditional lead sinkers. Bismuth sinkers are widely used in Britain, where the poisoning of Mute Swans led to a ban on the sale, import and use of lead sinkers in 1987. Bismuth has a density closer to lead than the other materials. However, bismuth sinkers are not yet widely available here.

The North American Loon Fund, Environmental Defense Fund, and Trumpeter Swan Society conducted a special panel discussion on the subject on March 22nd at the 58th North American Wildlife and Natural Resources Conference in Washington, D.C. Some predict a national ban on the use of lead sinkers in the not too distant future.

Source: Cincinnati Enquirer (1-21-93)

Iowa DNR Report Will Document Loss of Bass Habitat

John Pitlo and fellow Iowa DNR biologists have completed a seven year largemouth bass study on the Upper Mississippi River. The DNR caught more than 35,000 bass from 1985 through 1992 in an effort to establish a baseline of information for this important game fish.

Until this study was completed there was no single study that documented mortality and growth conditions sufficient to make well informed management decisions.

Final editing is now being completed, but the preliminary results appear to confirm fisheries biologists fears that critical components of bass habitat are disappearing. Sedimentation is causing spawning, rearing, and over wintering areas to diminish.

Pitlo indicated that in one 18 mile section of river near Bellevue, there were only three over wintering locations found for bass. According to DNR technician Maurice Anderson, who also worked on the study, bass need 4-6 feet of water out of any current. Such conditions are found primarily in backwater locations. Main channel locations with high velocities cause bass to expend too much energy to survive until spring.

The study also found that bass populations have declined 60% in some locations studied. Reasons for this decline have not yet been positively identified. Results of this study, may produce recommendations for changes in fishing seasons, bag limits, etc.

Contact: John Pitlo, Iowa Department of Natural Resources, RR 3, box 160, Bellevue, IA (319) 872-4976

National Audubon Society Missouri River Project

According to an article in the Omaha World Herald (2-18-93), the National Audubon Society has initiated a project to help restore sections of the Missouri River to the magnificent fish and wildlife haven it once was.

The Audubon Society plans to sponsor a multi-state Missouri River Education Project beginning this year, the 150th anniversary of John James Audubon's trip up the river to sketch and write about its natural values.

Ron Klataske, the Society's Regional Vice President, said that the project will feature public workshops in Nebraska, Iowa and other states through which the river flows; field trips; magazine articles and probably a videotape. States will be asked to designate "Missouri River Adventure" observances.

The goal, Klataske said, is to help agencies make the Missouri River a better wildlife corridor and haven for fish. The Society plans to educate the public about the river and its past, and then work with agencies such as the U.S. Fish and Wildlife Service and the Papio Natural Resources District on projects up and down the Missouri River.

Federal records indicate that about 522,000 acres of wetland along the Missouri in Nebraska, Iowa, Kansas, and Missouri have disappeared since people began changing the river. Agencies hope to restore 3-10% of the lost habitat.

"A lot of interest can be focused on the river by looking at what it is now, what could be restored, and what the river was like 150 years ago when John James Audubon was here," Klataske said. He said the Society effort will continue beyond the year.

USFWS Large River Initiative

The U.S. Fish and Wildlife Service (Service) will officially kick off its Large River Initiative with programs on the Missouri, the Lower Mississippi, and the Yukon rivers in

October 1993.

The goal of the Service's "New Beginnings" Program on the Missouri River is to "Facilitate; in cooperation with interested governmental, Tribal and private parties; the promotion of all of the diverse Missouri River uses, while ultimately achieving recovery of the Missouri River Ecosystem's natural resource values and environmental health, for the benefit of Basin residents, consistent with existing resource uses".

The New Beginnings Partnership involves all interested entities in the Basin. The Service emphasizes that "...the Program is not designed as a means to change current Missouri River resource uses. Navigation, flood control, municipal and industrial water supply, irrigation, recreation, and many other ongoing resource uses are legitimate and vital to Basin residents."

The Service believes "...that Missouri River resource users can live in relative harmony, if communications are improved, and all Partners begin looking for ways to improve their activities without inadvertently impacting other users. The Service believes that improvements in the System's biological productivity and recreational value can be made which are complementary to existing and future navigation, flood control and water supply needs; the reverse is likely also true. We simply need to do a better job of working together to achieve shared objectives."

Through partnership activities, the Service believe that mechanisms can be found to restore many of the River's natural functions which over the eons created and sustained this great System. The Service believes that these natural functions are compatible with existing and future developmental River uses.

Program objectives include the following:

- Facilitate establishment and coordination of an operational Missouri River environmental management, research, restoration and enhancement program involving Federal, State, Tribal and local governments, and public interest groups.

- Coordinate the preparation, facilitation and implementation of a comprehensive action plan for the management, restoration and enhancement of fish, wildlife and related environmental and recreational resources within the Missouri River Ecosystem in concert with existing and future navigation, flood control and water supply needs.

- Develop and implement plans for providing fish and wildlife resource-based recreational opportunities for the people of the Missouri River Ecosystem.

- Establish a functional outreach program to involve and exchange information with the public concerning problems, opportunities and resource management and restoration needs in the Missouri River Ecosystem.

The overall Missouri River effort will be led by the Service's Region 6 (Denver), with the Service's Region 3 (Minneapolis) cooperating.

The lower Mississippi effort will be led by the Service's Region 4 (Atlanta), and will include funding for some activities of the Lower Mississippi River Conservation Committee (LMRCC) headquartered in Vicksburg, MS. Many of the LMRCC goals and objectives are similar to those promoted on the Upper Mississippi for the past 50 years by the Upper Mississippi River Conservation Committee (UMRCC).

In future years the Service hopes to initiate similar programs on the Ohio, and Connecticut rivers.

Contact: Kent Keenlyne, Region 6 Coordinator, Pierre, SD (605) 224-8693, Jerry Rasmussen, Region 3 Large River Coordinator, (319) 876-1911, or Doug Fruge, Region 4 Coordinator, (601) 875-9387.

The Mississippi River Project

The subject water quality monitoring project is being supported by the Clorox Company, U.S. Soil Conservation Service, Mote Marine Laboratory, U.S. Environmental Protection Agency, and U.S. Army Corps of Engineers. According to the project brochure, distributed at the Watershed '93 conference, this is a major event in observance of the "*Year of the Gulf of Mexico*".

MISSISSIPPI River PROJECT
The Clorox Company
U.S. Soil Conservation Service
Mote Marine Laboratory
U.S. Environmental Protection Agency
U.S. Army Corps of Engineers

The brochure states that "... there is a 3,000 to 4,000 mi² area near the mouth of the Mississippi River where oxygen is depleted. Scientists believe that this "dead zone" is caused by an overabundance of nutrients and other substances entering the Gulf from the Mississippi River. These pollutants enter the Mississippi from the 30 different states which comprise the 'Mississippi Watershed'.

'While industries can be held accountable for what they do, the single biggest threat to health of our waterbodies comes from non-point sources. Rains can carry pollutants from our streets and yards to our streams, rivers, and ultimately, the Gulf of Mexico. Things we dump or spill into our yards and waterways, the over-use and mis-use of pesticides and fertilizers, leaking septic tanks, or the incorrect disposal of commonly used products like oil or transmission fluid all add to the problem.

'... The Mississippi River Project is designed to increase public awareness about the relationships between our bodies of water - how pollution can move from Montana or New York to the Gulf of Mexico and how that should be of concern to all Americans. More than a communications effort, this project will link groups with a common interest in protecting our waterbodies, through education and coordinated action."

The Project's Goals are stated as follows:

- Focus public attention on the relationship between feeder rivers, the Mississippi and the health of the Gulf of Mexico.

- Provide a platform for education on what individuals can do to make a difference.

- Include as many groups as possible with "enhancement" and collateral projects.

"The Project will develop and provide curriculum to selected schools along the Mississippi River. Taught by the Soil Conservation Service, these materials will address the relationships between waterbodies, the impact of pollutants on the marine environment and what individuals can do to make a difference.

'On May 12, 1993 1,000 students in ten states along the Mississippi River will conduct a real water quality test. They will test for phosphates and nitrates. Soil Conservation Service personnel will conduct a field test as well. Samples will be sent to Mote Marine Laboratory in Sarasota, Florida for laboratory analysis. A report will be made available which will survey the project results."

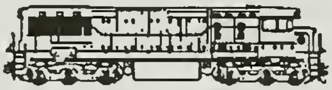
A curriculum is being written by scientists and educators in conjunction with a number of state and federal agencies. This material is designed to generally educate individuals - not to advocate a particular tactic or initiative. Master copies of this curriculum will be available for duplication.

For further information contact: Honey Rand, Project Coordinator, or Heather Henry, Communications Assistant (813) 388-4441 or write to "Mississippi River Project", c/o Mote Marine Laboratory, 1600 Thompson Parkway, Sarasota, FL 34236

Barges, Economics, and the Environment

There is no doubt that barge traffic plays a major role in our national economy. However, a recent independent study conducted by economists at the University of Iowa and Iowa State University has cast some doubt on the magnitude of that impact and its relative importance to the State of Iowa.

The above mentioned study entitled, "Transportation and Iowa's Economic Future", evaluated the economics of barge traffic for that state in light of impending costs which society may have to incur to rehabilitate or reconstruct an ageing system of locks and dams on the Upper Mississippi River. The following summarizes some of the information presented:



- Commodities shipped by barge must first be transported by truck or rail, often by both either directly or via an elevator, from their point of production (typically farms) to a barge port. In some cases a significant portion of the journey from grain elevators to New Orleans is made by rail before the transfer to a barge takes place. It may be cost-effective, particularly in western Iowa, to ship by rail to a barge port as far away as St. Louis.

- Barges provide the least expensive means of shipping bulk commodities long distances to areas in the continental United States served by the inland waterways, given the current finance and pricing structure. Iowa's agricultural sector benefits through the lower costs facilitated by river navigation in the shipment of grain and dry ammonium phosphate fertilizer.

- Cost differences between barge service and rail service between Iowa and the Gulf of Mexico vary depending on the point of origin within the state. These cost differences also vary with barge rates, which fluctuate quite substantially. During times of relatively low barge rates, barge service in eastern Iowa may cost inland Waterways as much as ten cents per bushel less than rail service.

- Generally speaking, a truck-barge combination is the cost-effective transportation alternative from the eastern one third of Iowa to the Port of New Orleans. The remainder of Iowa shifts among modal combinations, depending on the particular location and the prevailing barge rate.

- "Unit" trains of up to 75 cars also are competitive for shippers in a limited number of Iowa locations.

- Barge service is a much less important mode for the nonagricultural part of Iowa's economy. Less than a fifth of the state's manufacturers feel that their access to a waterway is good enough to constitute a workable solution for shipping final or even most intermediate products.

- Longer en route travel time is by far the least positive aspect of barge service. Essentially no manufactured goods travel on barges for any portion of their journey to purchasers.

- Inland waterways require ongoing expenditures for operations and maintenance (O&M) and investments to rehabilitate facilities or expand their capacity. Significant rehabilitation costs will soon be required for many of the Mississippi River's 50+ year old locks and dams.

- Some feel that upper Mississippi River locks and dams need to be lengthened to serve longer barge tows, thereby more adequately serving what they expect to be steadily increasing demand.

- The Water Resources Development Act of 1986 provided that half of future investments in the inland waterway system, whether to expand capacity or rehabilitate facilities, must be funded by the Inland Waterway Trust Fund. The other half of the costs are to be defrayed through general funds.

- The Inland Waterway Trust Fund is financed by a tax on diesel fuel paid by waterway users (implemented at six cents per gallon in 1981). This tax is gradually increasing. At its 1990 level, the tax generated revenues of $62.8 million. The rate is scheduled to escalate to 20 cents per gallon by 1995, when annual revenues should grow to approximately $100 million annually.

- The Inland Waterway Trust Fund cannot be used to finance any of the system's operating costs. Use of these funds is restricted to financing half of future capital expenditures and major rehabilitations. Also any new projects on the Upper Mississippi River must compete for funds with projects elsewhere on the inland waterway system.

- In 1990, the U.S. Army Corps of Engineers spent $82.4 million to meet routine operating and maintenance needs on the Upper Mississippi (U.S. Congress Congressional Budget Office 1992). Routine needs include periodic dredging of channels and repair of locks, dams, and other structures. They also include costs associated with the routine operation of locks and dams.

- The Corps is currently proposing a series of comparatively major lock and dam rehabilitation projects on the Upper Mississippi. In FY 92 $19.4 million is programmed for this purpose, total cost is estimated at over $71 million over a number of years. With federal match, about $200 million will be available each year for reinvestment in the entire 11,000 mile waterway system.

- Most of the existing Upper Mississippi River locks are 600 feet long, thereby limiting the number o 1200 foot long barge tows that can be accommodated in a single lockage. If locks were rebuilt with chambers 1200 feet long, the capacity of each lock would be greatly increased.

- Small-scale capacity improvements would cost about $10 to $20 million per facility, however,increasing lock length to 1200 feet would cost about $380 million per lock.

- None of the Upper Mississippi River locks and dams had a traffic volume in 1987 even approaching capacity. Most carried about 50 to 70 percent of capacity, however, traffic volumes vary greatly from season to season. There are only about seven weeks of the year when even three quarters of the Upper Mississippi River system's 1 million ton capacity is reached.

- The Corps of Engineers is currently engaged in a study of inland waterway investment needs. Their projections imply significant traffic growth on the Upper Mississippi River over the next few decades. In general, the unconstrained traffic forecast for 2020 is about twice that of 1990 for locks and dams on the Upper Mississippi River. According to the Corps forecast, these large increases in traffic would lead to significant delays at each lock as barges wait to pass through, unless capacity were increased. The Corps modeled the effect of these delays by diverting traffic to other modes when delay cost would exceed the cost savings afforded by waterways. The resulting traffic is about 30 to 60 percent higher than current traffic levels, in contrast to the doubling that was forecast in the absence of capacity constraints. However, delays for the traffic that remain on the waterways would be significant because traffic levels would be close to the actual capacity of the locks.

- Actual delays in 1987 ranged up to six hours at Lock 22, but generally delays were fairly short. In contrast, the forecast for 2020 shows very long delays at some locks, and up to eight days at Lock 22. If larger capacity locks were in place by 2020, delays would be very small and the amount of traffic that could be handled would be higher.

- If there were no financial constraints, the Corps has estimated that a comprehensive program of improvements to upgrade the entire Upper Mississippi system would cost $4.8 billion in 1991 dollars. This program would involve large-scale capacity investments at nine Upper Mississippi River locks, along with three other large-scale capacity investments and a series of small-scale capacity and rehabilitation investments elsewhere on the system. The current financing mechanism will be incapable of generating anything close to $4.8 billion.

- If large-scale capacity improvements on the Upper Mississippi River are to be considered, major increases in revenues must be secured. Either users must pay significantly higher charges, or the structure of the financing approach must be revised such that a larger portion of the costs would be borne by the federal general fund.

- One approach examined by the Corps of Engineers to increase revenues is to steadily increase the diesel fuel tax by one cent per gallon annually starting in 1996. A one cent per gallon tax increase each year from the 1995 level of 20¢ would lead to a tax rate of 45¢ per gallon by 2020. The effect of this 25¢ increase would be to increase by about three cents the cost of shipping a bushel of corn from Iowa to New Orleans.

- Serious choices must be made regarding how locks and dams should be maintained and financed. The principles underlying good practices in financing are independent of the scale of investment undertaken; the rates needed are, of course, greatly affected by the scale of investment.

- Our analysis leads us to conclude that minor capacity enhancements may very well be called for, but doubling the size of upper Mississippi River locks would be unwise. This conclusion is supported by several considerations.

- If users of transportation are not asked to pay the full cost of that use, their demand will be artificially high. Only when full-cost pricing is established can an accurate measurement of demand be made. Users of inland waterways pay none of the operation and maintenance (O&M) costs associated with locks and dams. Through the diesel fuel tax, these users are paying half of the capital costs of new investments and only about eight percent of the total costs of the system (U.S. Congress Congressional Budget Office 1992). Thus, a much greater portion of the overall costs of providing navigation on the Upper Mississippi River rests with taxpayers generally rather than with actual users of the locks and dams.

- It is significant that even with a major subsidy, the cost of shipping grain from Iowa elevators to New Orleans is only marginally cheaper by barge than by rail in the eastern part of the state. Rail often is a less costly mode of transportation in western Iowa. If subsidies to users of inland waterways were removed and user fees were raised to cover all costs, it is unlikely that current demand levels would continue. It is much less likely that demand would approach levels that justify consideration of major capacity improvements. In short, major improvements are very unlikely to be efficient investments of public capital.

- The Corps has forecast a doubling of grain shipments, assuming that the capacity to make these shipments will exist. While it is sensible to look ahead and anticipate future transportation infrastructure needs, it is not prudent to make costly investments when great uncertainty enshrouds the forecasts that govern the economic feasibility of these investments. The main source of this uncertainty is whether demand for Iowa grain by foreign nations will double. Foreign policy considerations, agricultural technology advances in other nations, and other unpredictable factors are bound to affect this demand. Additionally, alternative domestic uses for Iowa grain will influence how much is shipped down the Mississippi River bound for foreign markets. Technology is advancing very quickly in such areas as alternative fuels, food products, and plastics. In short, it is difficult to say with certainty that Iowa farmers will want to double their shipments of grain down the Mississippi River.

- It may not be justifiable to expand capacity when that capacity is needed only during limited periods of time. One alternative is peak-period pricing. By assigning higher prices for the use of locks during periods of historically heavy demand, some of this demand can be shifted to periods when the demand is less. The effect is to improve the overall utilization of facilities and to reduce the need for costly expansions.

- The current practice of substantially undercharging users of inland waterways amounts to a subsidy from taxpayers to the farmers whose returns (net of transportation costs to New Orleans) are bolstered. In a sense, then, the underpricing of these waterways is as much related to agricultural policy as it is to transportation policy. To the extent that this is the case, direct support subsidies to farmers are likely to be more cost-effective than massive public expenditures on locks and dams.

- If barge operators were asked to pay higher user charges to defray more fully the costs of services they consume, what would happen to the costs of shipping grain to New Orleans? In the long run, barge rates would increase, though not necessarily by the same level as user charges. The effect would be to make rail service relatively more competitive in markets where cost advantages previously favored barges. Whether railroad companies would choose to raise rates and thereby improve profit margins or hold rates down to increase market shares is unclear. Most likely, some increases in shipping costs would face farmers in affected markets. The magnitudes of these cost increases, however, probably would not be great.

- Even with the subsidies barge operators now enjoy, rail service out of the state is often the lowest cost choice from points in central and western Iowa (depending on fluctuations in barge rates).

- With sizable rail-to-barge transfer facilities in locations such as St. Louis (downstream from the locks and dams), the lowest cost alternative to the Gulf of Mexico from Iowa could well prove to be rail for the first part of the journey and barge for the remainder.

- Users of locks and dams on the Mississippi River should pay the costs of the services they consume. There is, however, a "public good" argument for some level of general fund support to operate dams on the river. In addition to facilitating navigation, these dams contribute to economic and quality-of-life enhancements, and it would be difficult to establish a functioning market to charge those who benefit from such enhancements. Benefits generated by the dams include preservation of wildlife habitats, flood control, and recreational opportunities. Because the benefits of dams accrue to many people and because a market is not feasible, public funding is a logical source of support. The portion of total costs of the dams to be defrayed through general funds could be determined through an assessment of the relative magnitudes of benefits to waterway users and to the general public.

- Iowa's interest in the Mississippi River derives from the fact that an important part of the state's commodities have markets in other nations. The costs of reaching these markets are a critical factor in making Iowa's commodities competitive. As federal taxpayers, Iowans also wish to see the government make investments that are efficient.

- In the case of large-scale capacity enhancements of locks and dams on the Mississippi River, the large costs and uncertain demand argue against advocating these investments at the present time. Iowa should endorse a prudent, flexible policy that would match the supply of transportation on inland waterways with reasonable demand expectations.

- Such a policy should include the following elements: (1) a commitment to the maintenance of existing locks and dams on the upper Mississippi River, (2) investments should be made that are low cost and that ensure continued operation of the waterway (i.e. adoption of measures to increase the efficiency of locks and dams, including administrative or pricing mechanisms to shift demand from peak periods to other times), (3) development of transportation alternatives to New Orleans as demand materializes, the state should promote better coordination of rail routes from Iowa to the lower Mississippi River and New Orleans. These three elements would help ensure cost-effective transportation of Iowa commodities to foreign markets. They also would avoid sizable public expenditures on expanded facilities that are not justified.

- Keeping the costs of inland waterways in step with the benefits they produce is, in the end, the surest way for these important facilities to strengthen Iowa's long-term economic prospects.

This study provides some rather interesting ideas that may provide an opportunity for transportation and environmental advocates to develop solutions which both interests could support in achieving harmony on the Upper Mississippi and other inland waterways.

Certainly, no one is seriously interested in dismantling our nation's locks and dam system or in allowing the system to deteriorate. However, most natural resource managers are concerned about unconstrained expansion of navigation capacity, and the resultant impacts on our river ecosystems.

Perhaps if navigation and environmental interests seriously tried they could reach consensus on system by system navigation capacities which would be economically feasible, which would meet transportation needs and which would preserve riverine environmental integrity.

Both interests could save a lot of resources and time by pulling together through compromise and consensus for a common solution, and then supporting one another in obtaining funding for reasonable improvements.

Source: Forkenbrock, D.J., Foster, N. ., and Crum, M. R. 19 . Transportation and Iowa's Economic Future. Public Policy Center, The University of Iowa, Iowa City, IA 52242.

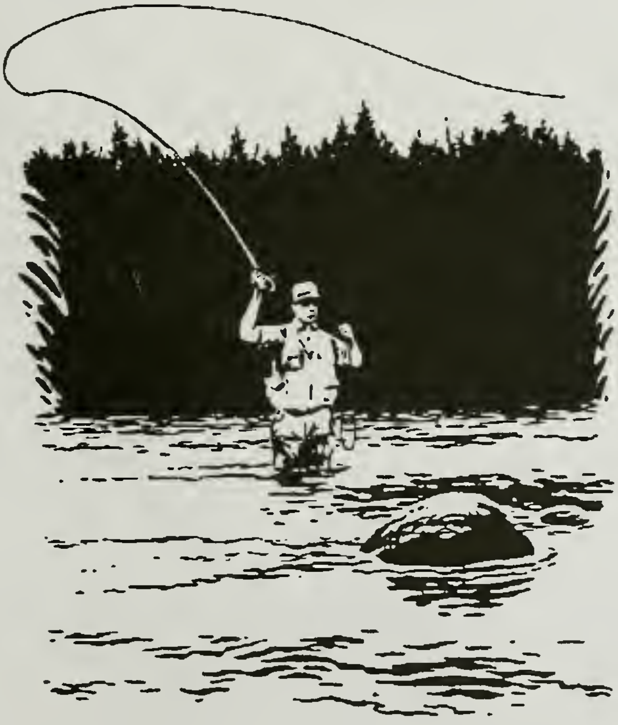
Restoring Salmon Habitat and Jobs

The Pacific Rivers Council proposes a Strategic Watershed Restoration Initiative that would restore vital riverine ecosystems and prevent extinctions while providing family-wage jobs regionwide. The Council suggests that the Project would help sustain healthy forests and species, maintain soil and plant productivity, good water quality and quantity, recreational values, tourism and quality of life.

The Strategic Watershed Restoration Initiative is a two-step program: (1) Protect the remaining salmon refuges by protecting old growth trees and the riparian areas that border these streams. (2) Secure or "storm-proof" the refuges by fixing the most serious road problems and landslide areas, where major rainstorms can wash massive amounts of sediments into streams. This work includes removing roads, improving drainage and eliminating stream crossings.

The Council estimates it will cost about $157 million to storm-proof the 137 westside watersheds, creating between 7,000 and 11,000 jobs. Most of these jobs would be located in rural areas hard hit by the forest stalemate.

The Council says work shouldn't end there. A systematic reduction in the number and mileage of roads on federal forest land is necessary to minimize their detrimental impacts on rivers and salmon runs. Riparian areas must be stabilized, reforested and protected. At the same time the Council defends against pseudo-restoration proposals such as salvage logging--"they are just timber sales under a different name".



According to the Council paying for these projects will not require a big increase in federal spending. They believe between $25 and $50 million can be redirected from other forest programs where they say it has been wasted or not used. The Council believes that in the long run, a permanent forest restoration account needs to be established that provides for repairing past damage.

Source: The Eugene, Oregon Register Guard (2-26-93).

Field Guide to Freshwater Mussels of the Midwest

The Illinois Natural History Survey has just published a first-of-its-kind field guide to freshwater mussels of the Midwest. Written by Survey investigators Kevin S. Cummings and Christine A. Mayer, this 194 page, hardcover book will help amateurs and professionals alike in identifying species, many of which look remarkably similar.

A color photograph of the shell of each species helps ensure quick identification. The front section of the book includes information on the biology, economic importance, and conservation of freshwater mussels, which are one of the most endangered groups of animals in North America.

Surveys conducted over the past few decades have documented significant declines in mussel populations because of over harvesting, competition from exotic species such as the zebra mussel, water pollution, and other factors.

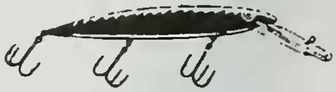
The bulk of the book consists of species accounts for each of about 75 native mussels. The text of each account includes a description of key characteristics of the mussel and the habitat in which it is normally found; each account also contains, in addition to a color photograph, a range map showing the geographic distribution of the species.

Field Guide to Freshwater Mussels of the Midwest is being sold to the public for $15.

Contact: Distribution Center, Illinois Natural History Survey, 607 East Peabody Drive, Champaign, Illinois 61820 (or call 217-333-6880) or for additional information contact John Ballenot in the Publications Office at 217-244-2115.

Reader Survey

We are pleased with the tremendous response we are receiving from our "Mandatory Reader's Survey" circulated with the last issue of *"River Crossings"*. As usual March was a month of meetings and travel, so we haven't had time to summarize comments and make adjustments to our circulation. We will try to do that for the next issue. Many good comments have been received, and we plan to adapt as many suggestions as possible to make our newsletter as "reader friendly" as we can within the limitations of our resources. Some subtle changes have already been made to the format of this issue.



Congressional Action Pertinent to Mississippi River Basin Rivers

Biodiversity

H.R. 305 (Poner, R-Ill.) Establishes a national policy for biological diversity conservation.

Flood Insurance

H.R. 156 (Deutsch. D-Fla.) Requires flood insurance claim payments to include 75 percent of cost of elevating buildings so they will remain eligible for insurance.

Government Reorganization

H.R.109 (Boehlert, R-N.Y.) Elevates the Environmental Protection Agency to cabinet status.

Land Conservation

H.R. 428 (Walker, R-Pa.) Excludes value of land with permanent conservation easement from estate taxes.

Military Lands

H.R.202 (Jacobs, D-Ind.) Requires the Defense Department to protect natural areas on military bases that are being closed.

Mining

H.R.194 (Hefley, R-Colo.) Withdraws Fort Carson, Colo. from mineral development.

H.R. 322 (Rahall, D-W.Va.) Provides for major mining law reform.

H.R. 363 (Smith,D-Iowa) Requires the Interior Department to develop a program to preserve and replace top soil at surface mining projects.

Water and Wetlands

H.R.340 (Schaefer, R-Colo.) Clarifies waiver of immunity from Clean Water Act regulations at federal facilities.

H.R. 350 (Edwards, D-Calif.) A wetlands reform bill favored by environmentalists that aims to speed up permit processing and offers incentives to private landowners to preserve wetlands.

Wilderness.

H.R. 195 (Hefley, R-Colo.) A wilderness proposal, similar to the bill the Senate passed last Congress. It sets aside 600,000 acres of BLM and Forest Service land.

Source: Land Letter, Vol. 12, No. 2,3 (1-20-93)

River Crossings

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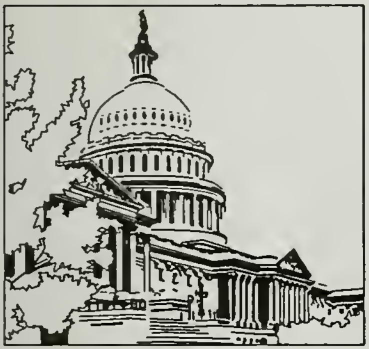
Help Save America's Interjurisdictional Rivers

Congressman Steve Gunderson, (R/WI) recently sent a "Dear Colleague" letter under the subject title to over 70 Congressional Offices announcing the forthcoming introduction of the "Cooperative Interjurisdictional Rivers Fisheries Resources Act".



The text of Gunderson's letter follows:

"Dear Colleague:

'I will soon introduce 'The Cooperative Interjurisdictional Rivers Fishery Resources Act of 1993'. 'The bill is intended to take an important step forward in preserving and protecting the future well-being of the interjurisdictional rivers of the United States, and the fishery resources of those rivers.

'The Cooperative Interjurisdictional Rivers Fishery Resources Act of 1993 builds on a highly successful interjurisdictional rivers management program now in place on the Upper Mississippi River. Through the Environmental Management Program the five states of the Upper Mississippi are successfully coordinating management and husbandry of their shared river resources.

'Interjurisdictional rivers, those rivers that flow between or are common to two or more state boundaries, and associated wetlands provide habitat critical to an abundance of fish and wildlife. These same rivers are also conduits for much of the nation's industrial and domestic wastes, and for the transport of raw materials and manufactured goods.

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'Consequently, large rivers and large river fisheries are impacted by a wide variety of waterway development programs, many of which are federal. These developments are accelerating and increasingly degrading large rivers and large river fishery habitats.

'Individual state natural resource agencies have not been as effective as they could be in managing and protecting these rivers because of this fragmented jurisdiction. That is why I have introduced the Cooperative Interjurisdictional Rivers Fishery Resources Act of 1993.

'The Act would establish a council, chaired by the Secretary of Interior and consisting of representatives of state and federal agencies that play a role in fish and wildlife management. The council would be responsible for developing a national interjurisdictional rivers management strategy, and establishing comprehensive plans for the five highest priority interjurisdictional rivers in the nation.

'In addition, the Act establishes a pilot test of the Mississippi Interstate Cooperative Resource Agreement, which was entered into in 1991 by 29 states of the Mississippi River Basin and the U.S. Fish and Wildlife Service to develop cooperative fisheries and resource management programs.

'The Cooperative Interjurisdictional Rivers Fishery Resources Act is supported by the U.S. Fish and Wildlife Service as well as the national and local chapters of the major river resource management organizations.

'If you would like to join me as an original cosponsor of this legislation, or if you have any questions about the bill, please contact me or Judy Gifford at 5-5506 by June 10."

Sincerely,

Steve Gunderson

As of May 31, Pat Williams (D/MT) and Martin Sabo (D/MN) have signed on as "original cosponsors". Other cosponsors are needed, and MICRA members and enthusiasts are encouraged to contact their respective Congressman soliciting support for the Bill.

Congressman Gunderson plans to introduce the Bill shortly after the June 10th deadline mentioned in his "Dear Colleague" letter. The new Bill will be forwarded to the Merchant Marine and Fisheries Committee for consideration. A similar bill, H.R. 4169, introduced in the last Congress, became a casualty of a busy agenda. This year's agenda will likely be equally busy, but it is hoped that growing support from the Bill's constituents will elevate its priority with the Committee.

Congressman Thomas J. Manton (D-NY), Chairman of the Merchant Marine and Fisheries Committee's Subcommittee on Fisheries Management held an oversight hearing on interjurisdictional fisheries management and proposed legislation on May 19th in Washington, D.C.

Representatives of the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, State officials, representatives of commercial and recreational fishing interests, and environmentalist were called as witnesses.

River Crossings

Published by

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Larry Peterman, Montana Department of Fish, Wildlife and Parks, Helena
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River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

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Merchant Marine and Fisheries Committee

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William Hughes, NJ	241 CHOB
Earl Hutto, FL	2435 RHOB
Billy Tauzin, LA	2330 RHOB
William Lipinski, IL	1501 LHOB
Solomon Ortiz, TX	2445 RHOB
Thomas Manton, NY	203 CHOB
Owen Pickett, VA	2430 RHOB
George Hochbrueckner, NY	229 CHOB
Frank Pallone, NJ	420 CHOB
Greg Laughlin, TX	236 CHOB
Jolene Unsoeld, WA	1527 LHOB
Gene Taylor, MS	215 CHOB
Jack Reed, RI	1510 LHOB
Martin Lancaster, NC	2436 RHOB
Thomas Andrews, ME	1530 LHOB
Elizabeth Furse, OR	316 CHOB
Lynn Schenk, CA	315 CHOB
Gene Green, TX	1004 LHOB
Alcee Hastings, FL	1039 LHOB
Dan Hamburg, CA	114 CHOB
Blanche Lambert, AR	1204 LHOB
Anna Eshoo, CA	1505 LHOB
Tom Barlow, KY	1408 LHOB
Bart Stupak, MI	317 CHOB
Maria Cantwell, WA	1520 LHOB
Peter Deutsch, FL	425 CHOB
Gary Ackerman, NY	238 CHOB

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Don Young, AK	2331 RHOB
Herbert Bateman, VA	2350 RHOB
Jim Saxton, NJ	324 CHOB
Howard Coble, NC	403 CHOB
Curt Weldon, PA	2452 RHOB
James Inhofe, OK	442 CHOB
Arthur Ravenel, SC	231 CHOB
Wayne Gilchrest, MD	412 CHOB
Randy Cunningham, CA	117 CHOB
Jack Kingston, GA	1229 LHOB
Tillie Fowler, FL	413 CHOB
Michael Castle, DE	1205 LHOB
Peter King, NY	118 CHOB
Lincoln Diaz-Balart, FL	509 CHOB

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S. Capitol St. & Independence Aves., S.E.

The word from Washington is that the "Cooperative Interjurisdictional Rivers Fishery Resources Bill" enjoys broad general support from most Committee members. Now what is needed is for one or two of our respective Congressman to write letters of support to Chairman Manton. If this happens it is likely that a hearing will be scheduled for the Bill before the August recess.

MICRA members and supporters are encouraged to contact both their respective Congressmen and the members of the Merchant Marine and Fisheries the Committee's SubCommittee on Fisheries Management expressing support for the Bill. Members names and affiliations are displayed in the box above.

June and July are key months when new or renewed Congressional contacts should be made!

Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1993

What is the Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1993, and just what will it do?

The bill is very similar to H.R. 4169, introduced by Congressman Gunderson in 1992. It would establish a National Council on Interjurisdictional Rivers Fisheries, chaired by the Secretary of the Interior, and direct the Secretary to conduct a pilot test of MICRA.

The bill has been redrafted from the H.R. 4169 version to satisfy State concerns regarding State approval of any plans developed by the National Council. The following new Section has been added:

"(4) REVIEW AND APPROVAL OF STRATEGIC PLANS BY STATES. – The Council may not issue a cooperative action strategy under this section in final form unless–

'(A) the Council has submitted each comprehensive fishery strategic plan contained in the strategy to each State having jurisdiction over an interjurisdictional river that is covered by the plan; and

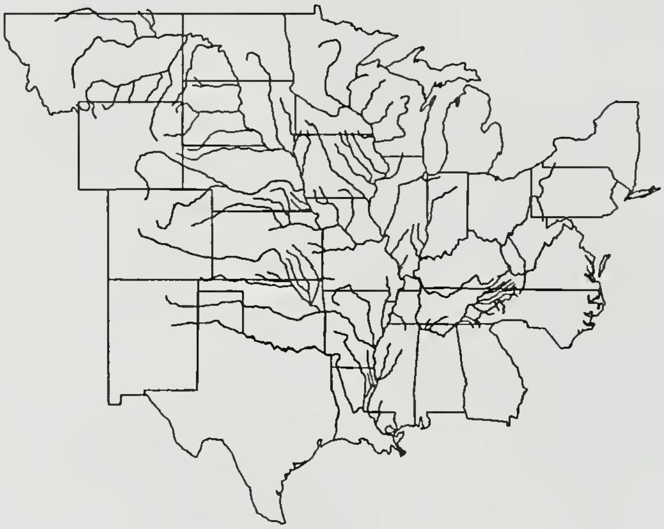
'(B) the head of the fisheries management agency of each of those States has approved the plan."

The most frequently asked questions regarding the Bill include the following:

(1) What Is the Bill?

- The Cooperative Interjurisdictional Rivers Fisheries Resources Act (Act) would establish a national council that would identify 10 of America's interjurisdictional rivers with the greatest need of cooperative fisheries management. Of these 10, the council would develop comprehensive fishery plans for the 5 highest priority interjurisdictional rivers. The national council would be composed of 13 members: 7 State fish and wildlife agency directors; and 6 Federal agency representatives. The Secretary of the Interior (or his designee) would chair the council.

- The Act would also provide for a pilot test of the Mississippi Interstate Cooperative Resource Agreement (MICRA) which was entered into by 28 states of the Mississippi River Basin in 1991. The U.S. Fish and Wildlife Service, Tennessee Valley Authority, U.S. Bureau of Reclamation, Chippewa-Cree Tribe (Montana), and the Chickasaw Nation (Oklahoma) have also signed on as cooperating entities. MICRA proposes to coordinate management of interjurisdictional fisheries. The MICRA project area and interjurisdictional rivers of the Mississippi River Basin are displayed in the center of this page.



Interjurisdictional Rivers of the Mississippi River Basin and the MICRA Project Area.

(2) Why Is the Act needed?

- The Nation's rivers provide over 3.5 million miles of inland waterway. Throughout history, they have been used for commercial and private transportation; domestic, industrial and agricultural water supply; commercial, subsistence, and recreational fishing and hunting; hydropower production and other electrical generation; waste disposal; and non-consumptive recreation. These multiple uses have come at high cost to the fish and wildlife resources these rivers support.

- Interjurisdictional rivers flow between, or are common to, two or more states, countries, and/or other jurisdictions. These rivers form large ecosystems that must be managed comprehensively and holistically if they are to continue to provide environmental, recreational, and economic benefits to the Nation. Piecemeal management by the multitude of individual States, Tribes, and Federal agencies has produced fragmented conservation efforts that have allowed these resources to steadily decline.

- This Act would help reverse these declines by encouraging all concerned management entities to work together to identify and solve fishery resource problems.

(3) How would the Act be Implemented?

Once enacted into law, funding would need to be appropriated through the Secretary of the Interior to establish the national council. The Council would be convened to establish an action agenda that relies heavily on existing information and on MICRA project plans that have already been developed.

The Act would authorize $1 million per year to fund the actions of the Council and $2 million per year to fund the MICRA pilot programs. These funds would be authorized for each of the 3 years following enactment.

(4) Who would be on the Council on Interjurisdictional Rivers Fisheries?

- The Director of the U.S. Fish and Wildlife Service, acting for the Secretary, would serve as chairperson of the Council. Seven State Directors of fish and wildlife management agencies would be appointed to the Council with each representing one of the following River Basins: Upper Mississippi, Lower Mississippi, Ohio, Colorado, Missouri, Pacific Coastal, and Atlantic Coastal. The heads (or their designees) of the National Marine Fisheries Service, Department of Energy, Department of the Army Civil Works Division, Tennessee Valley Authority, and the Federal Energy Regulatory Commission would also serve on the Council.

(5) What Is an Interjurisdictional River?

- The Bill defines an interjurisdictional river as "a river that flows between, or is common to, 2 or more State boundaries or a State and a foreign country.

(6) What Is MICRA?

- The Mississippi Interstate Cooperative Resource Agreement, entered into by all 28 States wholly or partially located in the Mississippi River Basin.

- The U.S. Fish and Wildlife Service, coordinates the management of interjurisdictional fishery resources in the Basin. Under the Comprehensive Strategic Plan developed by the MICRA signatories, fisheries managers have agreed to share facilities and funding for implementing fishery management efforts that have common interagency ramifications.

(7) Which rivers would likely be addressed under the Act?

- The Act would direct the Council to identify high priority rivers by considering the severity of problems, the adequacy of existing management programs, the status and trends of fishery resources, the physical and biological characteristics of the basins, and the economic demands on the river. The Council would diligently try to select the highest priority rivers by consensus. Rivers such as the Mississippi, Missouri, Connecticut, and Ohio would undoubtedly be among the rivers considered.

(8) How would this Bill affect State prerogatives?

- Great care has been taken in drafting this proposed legislation to address concerns expressed by the States regarding maintaining State prerogatives under the various provisions of the Act. The Act would state that each State having jurisdiction over an interjurisdictional river that is covered by the plan can elect to participate in the plan or not.

(9) What is the Federal Government's role?

- Funding for implementation of this legislation would be provided to the Secretary of the Interior, acting through the Director of the U.S. Fish and Wildlife Service. The Service would act as coordinator/facilitator to ensure that the Council functions efficiently and would provide administrative support to complete the assigned work of the Council. The Service would also provide staff support to implement, evaluate and assist in reporting on all MICRA test projects.

(10) When would the provisions of the Act be completed?

- The Act would require the Secretary to submit final reports to Congress on the Council activities and on the success of the MICRA test projects within 36 months after enactment of the legislation into law.

MICRA Steering Committee Meeting

The MICRA Steering Committee will meet on June 28th at the Kansas City, Missouri International Airport Holiday Inn.

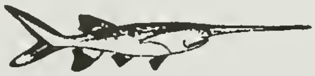
The meeting agenda will include (1) review and approval of the Paddlefish/Sturgeon Committee's Strategic Plan, (2) the Framework for the Conservation and Management of Paddlefish and Sturgeon Species in the United States, (3) the Interjurisdictional Rivers bill, (4) MICRA funding through joint federal aid projects, and (5) election of new MICRA officers.

Lee Hillwig a biologist with the U.S. Fish and Wildlife Service in Arlington, VA is the National Coordinator for the Framework for Paddlefish and Sturgeon Management. Lee will attend the Steering Committee meeting to discuss the "framework document" and its potential implications to MICRA. The recently completed "framework" recognizes MICRA as the mid-continent coordination point for paddlefish and sturgeon management.

Regarding MICRA funding, Nebraska recently joined the growing number of States who have submitted $1500 in annual dues payments for support of MICRA and its mission.

MICRA Paddlefish/Sturgeon Committee Completes Draft Strategic Plan

The MICRA Paddlefish/Sturgeon Committee completed their "Draft" Strategic Plan in mid May. It has been forwarded to the Steering Committee for review and comment, with hopeful adoption at the June 28th Steering Committee meeting in Kansas City.



The Plan includes the following seven goals:

Goal 1 - Identify and prioritize issues and concerns affecting paddlefish and sturgeon resources in the Mississippi River Basin and develop a mechanism for addressing them.

Goal 2 - Facilitate communication and coordination among entities responsible for paddlefish and sturgeon resource management in the Mississippi River Basin.

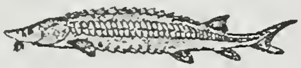
Goal 3 - Develop a basin-wide information management program based upon standard methods for collecting and reporting paddlefish and sturgeon fishery resource data.

Goal 4 - Identify and coordinate paddlefish and sturgeon research, management, culture and recovery programs to address species and habitat concerns from an ecosystem perspective.

Goal 5 - Encourage basin-wide conservation, protection, and restoration of paddlefish and sturgeon habitats.

Goal 6 - Seek basin-wide consensus regarding paddlefish and sturgeon conservation and management through development of uniform, compatible regulations and policies.

Goal 7 - Increase public awareness and appreciation of the ecological and economic importance of paddlefish and sturgeon species and the environmental and human-related impacts that threaten their welfare and continued existence.



The MICRA document addresses some of the major concerns regarding basinwide paddlefish management which prompted formation of MICRA in the late 1980s. Adoption and funding of the Interjurisdictional Rivers Fisheries Bill, would provide a big boost to implementation of the Plan, since that bill provides funding for MICRA over a three year period at $2 million annually.

Lower Mississippi River Conservation Committee Becoming a Reality

In April 1992, representatives from Mississippi, Louisiana, Arkansas, Missouri, Texas, U.S. Fish and Wildlife Service, and Army Corps of Engineers participated in a meeting in Vicksburg, Mississippi, to discuss the formation of the Lower Mississippi River Conservation Committee (LMRCC).

A mission statement, goals, objectives, and a constitution and by-laws have been developed for the LMRCC, borrowing much from similar documents of the Upper Mississippi River Conservation Committee (UMRCC) and the Missouri River Natural Resources Committee (MRNRC).

While the UMRCC and MRNRC have provided a basis for the development of the LMRCC, the details of how that entity will be structured and function are currently under further review by member agencies.

1. The LMRCC will be concerned with the fish, wildlife, and habitats of the Mississippi River and its floodplain from the Ohio River south (see map on this page).

2. Member agencies of the LMRCC will tentatively include both the "fish and wildlife" and "water quality" agencies of the States of Arkansas, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee. One representative from each of these agencies will make up the LMRCC Executive Committee. Each agency will have one vote on the Executive Committee.

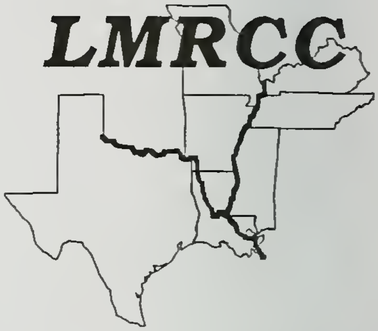
3. Other agencies and organizations may affiliate with the LMRCC as "Cooperating Agencies and Organizations." Three of these agencies have been identified to date: Texas Parks and Wildlife Department; U.S. Army Corps of Engineers; and the U.S. Fish and Wildlife Service. Cooperating Agencies and Organizations may participate in Executive Committee meetings, but may not vote.

4. The Fish and Wildlife Service will provide a Coordinator to facilitate the day-to-day operation of the organization.

5. Technical Sections (subcommittees) will be established for the following areas for: (1) Fisheries, (2) Recreation, (3) Wildlife, (4) Water Quality, (5) Law Enforcement, and (6) Red River (see map). Technical Section participation is open to all interested individuals.

Mr. Bill Dieffenbach, Assistant Planning Division Chief of the Missouri Department of Conservation, has volunteered to serve as initial chairperson of the LMRCC until the first meeting is held. The first meeting is scheduled for the last week of February 1994 in Little Rock, Arkansas, in conjunction with the Southern Division meeting of the American Fisheries Society. Following that meeting, one of the agency delegates from Arkansas will take over as chairperson.

Mr. Dieffenbach was selected as initial chairperson because he has had extensive experience as a chairperson of the UMRCC, headquartered in Rock Island, IL. The UMRCC has served as a successful advocate for fish and wildlife resources on the Upper Mississippi since 1943.



Lower Mississippi River Conservation Committee (LMRCC) Project Area (i.e. Lower Mississippi River mainstem). The Red River (also shown) will be addressed as appropriate under a technical committee of the LMRCC.

MICRA will use the UMRCC, LMRCC, and MRNRC as primary coordination points for fisheries issues in the Upper Mississippi, Lower Mississippi, Red, and Missouri rivers.

For more information on the LMRCC contact: Doug Fruge, U.S. Fish and Wildlife Service, Gulf Coast Fisheries Coordination Office, P.O. Box 825, Ocean Springs, Mississippi 39564.

Babbitt Endorses Ecosystem Protection Plan

In the first major endangered species listings since President Clinton took office, the U.S. Fish and Wildlife Service in March announced four noteworthy additions to the threatened species list that affect timber, irrigation and development interests in several western states.

These species include three bird and one fish species: Coastal California gnatcatcher, Mexican Spotted Owl, Western Snowy Plover, and Delta Smelt.

The highest profile listing was the coastal California gnatcatcher, which Interior Secretary Bruce Babbitt personally announced on March 25. The gnatcatcher resides along the Southern California coast on expensive real estate.

Developers have agreed to halt development on 210,000 acres of coastal sage scrub until November as part of a State program to develop a habitat protection plan for the area.

In listing the bird as a threatened species, Babbitt also proposed a special rule to allow destruction of some of the bird's habitat if specific guidelines are followed while State and local authorities develop an acceptable habitat conservation plan for the bird **that will also benefit other rare species** (emphasis added).

"We are taking a risk here because we simply must break through these environmental and economic stalemates," Babbitt said. "We have to be able to point to one community and prove they were able to, from start to finish, **protect both a species and the local economy** (emphasis added). If we don't, we'll run ourselves right off a cliff."

The Natural Resources Defense Council (NRDC), which petitioned the federal government to protect the bird, applauded the decision to list it as a threatened species "in the face of tremendous opposition."

The administration's support of the State's effort under the Natural Communities Conservation Planning Program to preserve a 6,000 square-mile ecosystem that the gnatcatcher and many other rare species use while allowing some development to go forward is being **touted as a wave of the future for controversial listings** (emphasis added).

About 2,600 pairs of the gnatcatchers remain in Southern California, while an additional 2,800 pairs live in Mexico.

The gnatcatcher depends upon coastal sage brush, up to 90 percent of which has been destroyed by farming and home construction.

The cooperative actions taken in California to reverse the demise of the California gnatcatcher and its ecosystem are encouraging because, in many ways, they are similar to actions which will be needed on many of our large river ecosystems in order to stem the loss of our native large river fish species. Cases in point being the middle and lower Mississippi, the Missouri, and the Colorado rivers, among others.

On the middle and lower Mississippi and Missouri rivers the pallid sturgeon and a whole compliment of other large river species are in significant trouble due to habitat loss to channelization and flood control projects. Portions of these rivers must be restored to more natural riverine condition if these species are to survive. These natural river conditions include periodic access of riverine waters to portions of the natural floodplain.

A change in river management philosophy will thus be necessary to restore these species, but this change does not have to adversely impact other river uses. A new concept called, "Riverine Resource Conservation Areas", could be established. These areas would restore segments of the natural floodplain, while providing significant economic benefits in the form of both flood control and recreation benefits.

Cooperative action is currently underway by MICRA, the U.S. Fish and Wildlife Service and the States on both the lower Missouri River (Sioux City to St. Louis) and the Middle Mississippi (St. Louis to the Ohio River confluence) to investigate opportunities for restoration of this type of river/floodplain connectivity.

Using Secretary Babbitt's philosophy, restoration of more natural riverine conditions in selected "conservation zones" could thus head off future confrontations over listings of numerous species of native Missouri and Mississippi river fish species.

Source: Land Letter, The Newsletter For Natural Resource Professionals, April 1,1993, Vol. 12, No. 10.

Strategy for Fish Habitat Restoration and Enhancement on the Middle Mississippi River

Missouri and Illinois fisheries biologists are cooperating with U.S. Fish and Wildlife Service biologists through MICRA to develop a strategy for fish habitat restoration and enhancement on the Middle Mississippi River.

The group met for the second time in Collinsville, IL on May 24-25 to develop ideas and an outline for preparation of the draft strategy. The project is in direct support of Interior Secretary Babbitt's interest in heading off environmental/economic collisions (discussed previously) through improved ecosystem management.

The project grew out of discussions last August between the MICRA Coordinator and St. Louis District Corps of Engineers hydraulic engineers and planners, who had expressed an interest in working with biologists to improve fisheries habitat, while maintaining the 9-foot navigation project.

blue sucker

Biologists hope to use the strategy (1) to achieve consensus between the States and the Fish and Wildlife Service on desired habitat conditions, (2) identify and develop new management opportunities, (3) provide engineers with information useful in making the navigation project more compatible with fisheries resources, (4) promote ecosystem restoration and management, (5) head off future confrontations between environmental and economic interests, and (6) reduce or eliminate the need to list Middle Mississippi River fish species on federal or State endangered species lists.

The Fish and Wildlife Service's Missouri River Initiative, scheduled for funding in FY 94, will in part, initiate a similar effort on the Missouri River (Gavin's Point Dam to St. Louis).

Large River Sampling Work Group

Difficulties involved in sampling large river fisheries populations have long been a dilemma to fisheries biologists.

Recent channel maintenance technology (bendway weirs) being tested by the St. Louis District Corps of Engineers to better manage the nine-foot navigation channel project, while providing for fishery habitat has elevated the need to better sample fish populations associated with deep, swift water habitats.

In response Charles Theiling, Illinois Natural History Survey, is organizing a group to address this problem. Anyone interested in participating or having ideas should contact Mr. Theiling at the Illinois Natural History Survey, Long Term Resource Monitoring Field Station, P.O. Box 368, West Alton, MO 63386, (314) 753-2221.

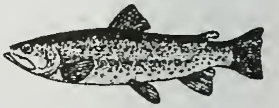
Dissolved Oxygen Problems At Hydropower Dams

In the last year or so Arkansas Game and Fish Commission biologists became increasingly concerned about low dissolved oxygen problems in waters below their State's hydropower dams, especially the Bull Shoals and Norfork dams.

Growing out of that concern they conducted a national survey of State fishery managers to develop information on the extent of the problem in other areas. Arkansas biologists felt such a survey would likely demonstrate that this is a national problem, that may be caused, in part, by inconsistent federal policy.

Thirty eight states responded, and some of the findings follow:

- Information provided verified a nationwide occurrence of low DO discharges below hydropower dams.
- Twenty states cited impacts from low DO.
- Some States apparently accommodate the impact by writing off the tailwater reach immediately below the dams. Others are content with, or are limited to, seasonal put-and-take fisheries.



rainbow trout

- Much of the national mitigation effort has focused on hydro impacts to anadromous fisheries.
- States with put-grow-and-take fisheries or trophy fisheries are the most concerned with low DO impacts.

brown trout

- Tailwater trout fisheries (themselves mitigation features) are being impacted by the very projects they were designed to mitigate.
- The TVA is the agency showing the most initiative and creativity in solving DO problems with a strategic, system-wide approach. - - It is worthy of note that the TVA is an official cooperating entity member of MICRA.

- The Corps of Engineers (COE) approaches the problem through "a cost shared project-by-project study with incremental justification required for each reallocation to non-authorized purposes." Operational concessions are made for fish and wildlife, only within the constraints imposed by authorized project purposes, typically flood control and hydropower. - - The COE is not presently an official cooperating entity member of MICRA.

- A casual look at two decades of data from Bull Shoals shows increasing frequency and duration of DO levels below 2mg/l at the hydro intake. Intuitively, this reflects an increasing BOD resulting from the exploding human and animal populations in the White River watershed.

- States have the opportunity to require Water Quality compliance in private hydro development, but federal projects are exempt from the FERC licensing process.

- Hydropower problems require site-specific solutions. Direct impacts may be generally categorized as water quality, water quantity, intake/turbine fish mortality and structural fish barrier impacts.

- Low dissolved oxygen is a water quality impact to the receiving tailwater, resulting from the use of oxygen deficient waters from a stratified reservoir to generate electricity.

- Technical solutions aim at increasing oxygen content in-reservoir, as the water passes through the intake and turbines, or as it reaches the tailrace.

- In addition to the lethal effects of low DO, there are impacts to fish production and growth.

- Dissolved oxygen in the gravel spaces where eggs, larval fishes and invertebrate food organisms must survive frequently measures well below that of the water column.

- Coldwater fishes other than trout, some of which are forage species, are affected by low DO.

- Marginal temperature situations are aggravated by low DO. Though fish may acclimate somewhat or seek refugia, the on-off character of the high flows associated with peaking power generation reduce those possibilities.

- Fishermen are also affected by low DO in hydro electric project tailwaters. Studies in Missouri at Lake Taneycomo/White River documented a linear decrease in angler success with the decline of DO below 6ppm. The economic impact to Taney County from low DO was estimated to be $358,000. That figure can be adjusted for inflation over the last decade and multiplied by the other impacted tailwaters in the White River system.

Another Missouri Department of Conservation study credited the Taneycomo trout fishery with 7% of the total economic activity in the area, yielding a 22:1 cost benefit ratio for Missouri's trout stocking program.

- Arkansas found the value of its trout fishery to be $143 million in 1988.

- Dissolved oxygen mitigation technologies are numerous and well studied. All have advantages and disadvantages. The main disadvantages are loss of power producing capacity and the cost of installing modifications. Some solutions, such as retrofitting turbines to an auto-venting design, would improve dissolved oxygen levels and yield an efficiency bonus which could attract a financial sponsor.

Arkansas biologists make the following recommendations:

(1) Recognize low DO as a significant regional problem amenable to system-wide solution through cooperative federal-state-private efforts.

(2) Task a committee of the Southeastern Association of Fish and Wildlife Agencies and/or the International Association of Fish and Wildlife Agencies with preparation of an association position on low DO. Address the inconsistency of requiring private hydropower projects to comply with State water quality standards while federal projects are exempt from licensing and compliance. Prepare testimony for Clean Water Act reauthorization hearings.

(3) Do not accept existing projects as the baseline environmental condition. Public values and benefits have changed. Energy rate structure and project payback calculation should be reexamined.

(4) COE should be required to study and report on dissolved oxygen problems/solutions in the region.

(5) Technical solution research should focus farther upstream in both time and space. Anticipation of increased BOD and prevention of hypolimnetic DO depletion should be feasible if aeration is begun prior to stratification.

Is it possible to accept some warming in exchange for increased DO? If so, a bank of wind-powered aerator/mixers near the upstream margin of the metalimnion might prevent DO depletion.

Arkansas biologists conclude that we should not settle for existing conditions in federal peaking power/flood control reservoirs. Re-examination of public benefits and associated economic values will reveal the need for operational and structural changes which are both politically and economically feasible.

Arkansas biologists further believe that COE policy on hydropower is obviously out of step with Congressional intent as expressed in the Electrical Consumers Protection Act of 1986 and implemented by FERC for licensed hydroelectric projects. COE hydroelectric projects are the largest remaining category not required to comply with State water quality standards and give equal consideration to fish, wildlife and recreation.

This issue needs to be brought to the attention of Congress through various means, including organized State testimony for the upcoming Clean Water Act reauthorization hearings.

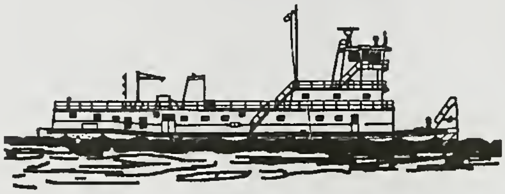
This may be an issue which MICRA will want to become involved in from the basinwide perspective.

For more information on the Arkansas survey contact: F. Allen Carter, Chief Fisheries Division, Arkansas Game & Fish Commission, 2 Natural Resources Drive, Little Rock, Arkansas 72205, (501) 223-6371.

Long-Distance Dispersal of Zebra Mussels Via Commercial Vessel Hulls

In April 1992, a barge (EMT-211B) owned by Eagle Marine Transport Co. was put into dry-dock at National Maintenance and Repair, Inc., in Hartford, IL. The St. Louis District Corps of Engineers was contacted by the company when more than 1,000 live zebra mussels were found on the hull.

Investigators; Thomas M. Keevin, Ronald E. Yarbrough, and Andrew C. Miller, U.S. Army Engineer District, St. Louis and Waterways Experiment Station, Vicksburg, MS; found clumps of zebra mussels (*Dreissena polymorpha*) attached to the lower seam of the bumper plate on the sides of the hull and along weld seams on the bottom of the hull. Clumps appeared to be randomly distributed but always on weld seams.



Numbers of individuals in six clumps along the bumper plate ranged from 8 to 34. Two clumps examined on the underside of the hull contained 66 and 96 individuals. Over 1,000 mussels were counted on the exposed part of the hull.

Mean shell length (SL) of 100 randomly chosen zebra mussels from several clumps was 17.3 mm (standard deviation - 1.6), minimum and maximum length were 11.6 and 21.1 mm, respectively.

Zebra mussels are reported to grow at a rate of 1.0 to 1.6 cm/year in slow and fast growing populations, respectively. It appeared to the investigators that the zebra mussels attached to the barge were approximately one year old.

Information on the barge's movement provided by Eagle Marine Transport Co. gives an indication of a probable veliger attachment site.

Barge EMT-211 B was in the Illinois River at Hennepin, IL on February 26, 1991; however, water at that time of year was too cold for spawning. The barge left the Illinois River (Spring Valley, IL) in May 1991. It is likely that veliger attachment took place in the Illinois River during the early spring or summer of 1991.

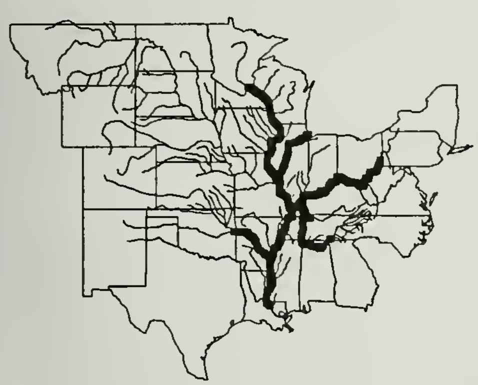
Assuming that the zebra mussels attached to the barge hull in Spring Valley, IL in May 1991, these mussels were transported a total distance of approximately 15,884 km before dry-docking. This included the upper Mississippi (as far north as Winona, MN), lower Mississippi (to Louisiana and Mississippi), and Illinois rivers.

During barge transit, locking and fleeting, there was a potential for dislodgement and spawning of the attached mussels. The investigators concluded that the potential for long-distance transport and dispersal of zebra mussels on the hulls of barges is considerable.

A map showing most of the current distribution of zebra mussels in the Basin is displayed on the next page. With the exception of the Missouri River, this map shows that much of the Basin's commercial waterway transportation network (i.e. the Mississippi, Ohio, Cumberland, Tennessee, and Arkansas rivers) has already been infected with zebra mussels. According to the findings in the St. Louis District study, there is strong reason to believe that the mussels were spread throughout the system by barge movements.

Lack of mussel infestation in the Missouri River, to date, could be for two reasons: (1) the relatively swift, turbid waters of the Missouri have not provided desirable habitat for the zebra mussel, or (2) the significantly lower volume of navigation traffic on the Missouri River simply hasn't provided adequate inoculation with zebra mussels to start a noticeable infestation.

In addition to the Basin's navigable waterways, the zebra mussel has been documented at four interior sites in the Basin. These are in West Virginia (near Charleston), Ohio (near Columbus), Indiana (near Ft. Wayne), and Iowa (near Decorah). This is according to information provided by the New York Sea Grant (exact tributary were the infestation was documented was not provided in the article reviewed for "*River Crossings*").



Current known distribution of the zebra mussel in the navigable waterways of the Mississippi River Basin (shown by thick line).

It seems obvious from looking at the results of the study conducted by Keevin, Yarbrough, and Miller; and at the zebra mussel's current distribution; that the commercial towing industry has been an important, if not the primary, vector in the early spread of zebra mussels throughout the Basin's major rivers.

Sources: Various, including: *Dreissena polymorpha* Information Review, Vol. 4, No. 1, Zebra Mussel Clearinghouse, New York Sea Grant Extension, 250 Hartwell Hall, SUNY College at Brockport, Brockport, NY 13320-2928.

Clinton Administration Backs Tribal Claim to Fishing Rights

According to an Associated Press article appearing in the South Dakota Capitol Journal on March 3rd, the Clinton Administration told the U.S. Supreme Court that the Cheyenne River Sioux should be allowed to control hunting and fishing where the Missouri River passes along the tribe's reservation

The government took over 100,000 acres of land along the reservation's eastern edge when the River was dammed to form Lake Oahe in the 1950s. But according to James Feldman, a Justice Department lawyer, the tribe still may regulate hunting and fishing there. Feldman said "It's a mistake to look at that...as the Indians being left with a bare vestige of rights".

The state of South Dakota is fighting the tribe's claim to regulate hunting and fishing for non-Indians. The case is being watched by tribes up and down the Missouri River and by several Western states.

At one point, Chief Justice William Rehnquist called the case "an incredibly muddled situation." Feldman said the State and the tribe may actually share jurisdiction over the area.

The Cheyenne River Sioux and the State had for years successfully negotiated agreements for regulating hunting and fishing on and around the lake.

But in 1988, the tribe said it would no longer honor State game licenses, and the State sued. A federal judge sided with the State, but the 8th U.S. Circuit Court of Appeals reversed his ruling last November.

Seven states – Montana, Alabama, Arizona, California, North Dakota, Utah, and Washington – filed a brief supporting South Dakota's appeal.

In recent years, the Supreme Court has been limiting the powers of Indian tribes over people who are not members of the tribe.

However, the Cheyenne River Sioux argued that they never gave up the right to regulate the Lake Oahe acreage, even after the government took it over.

The Supreme Court won't issue a decision for several month, but some justices questioned how the tribal Authority could be squared with the legal requirement to allow public access to the reservoir.

"If the public has access to the project for fishing where do you get the authority to charge a fee?", Justice David Souter asked. Rehnquist questioned why the tribe had waited so long to assert its rights over the area. The justices also raised questions about the tribe's jurisdiction, given that some of the disputed land was owned by non-Indians before the government took it over.

In Congress, according to a February 19th article in the Sioux Falls, SD Argus Leader, Representative Bill Richardson, Chairman of the Native American Affairs subcommittee of the Natural Resources Committee presided over a hearing designed to identify tribal concerns that he may include in a proposed Native American Fish and Wildlife Enhancement Act.

Ken Poynter, acting director of the Denver-based Native American Fish and Wildlife Society of 70 tribes testified that the 52 million acres of reservation lands, combined with other areas where tribes have authority over natural resources, would constitute a land mass the size of Montana.

"At least nine officially recognized endangered avian species, seven threatened or endangered mammalian species, 11 threatened or endangered fish species, 12 threatened or endangered plant species and one threatened reptile species occur on reservation lands," Poynter said in written testimony.

"Tribal fish hatcheries produce millions of salmon, steelhead trout, walleye and other species which support large and diverse fisheries." He complained that funding for tribal wildlife management personnel is inadequate, noting that the U.S. Forest Service employs 1,320 fish and wildlife experts to manage 190 million acres of lands.

Tribes and the federal Bureau of Indian Affairs together employ about 300 to manage more than 100 million acres, and most of their employees have multiple duties, Poynter said.

Missouri Basin Tribes Develop Tribal Water Rights Coalition

In January of 1993, the Mni Sose Coalition became an active non-profit corporation established to address all aspects of Indian water rights issues in the Missouri River Basin.

Presently, the coalition includes: Great Sioux Nation Tribes - Oglala, Standing Rock, Rosebud, Devils Lake, Sisseton-Wahpeton, Cheyenne River, Yankton, Winnebago, Lower Brule, Crow Creek and Santee Sioux Tribes, Rocky Boy Chippewa-Cree, Three Affiliated Tribes, Turtle Mountain Chippewa, Ponca Tribe, Omaha Tribe, Kickapoo of Kansas, Prairie Band of Potawatami and Sac and Fox of Missouri.

The primary purpose of the Coalition is to educate its membership on the nature, character and extent of their Indian Winters Reserved rights to the use of Missouri River water and tributary streams, including groundwater that underlies, borders or traverses their respective reservations.

The Coalition will assist member Tribes in developing plans to protect, preserve, utilize, administer, manage and develop their water resources for the economic and social benefit of all present and future Tribal members. When requested, the Coalition will act as an advocate for Tribes on specific water issues.

Historically, court decisions, lack of Federal funding and technical support, and restrictive Federal water policies have prevented Tribes from developing and implementing realistic and feasible water projects for their reservations. Therefore, a consensus was established between Federal and Tribal officials at a recent meeting in Washington, D.C. that there is an urgent need for both the Administration and Congress to reaffirm and fulfill its trust obligations to Indian Tribes in the protection and preservation of their valuable Indian Winters reserved water rights.

To clarify the Federal role in Indian water issues, the Tribal representatives determined that the Federal Administration, acting through the Secretary of Interior, should reaffirm its commitment to the precepts of the government-to-government relationship, Indian self-determination, and Tribal economic independence, by developing a policy statement that:

1. Provides independent Tribal Legal Counsel on Water Rights for both litigation and negotiation of water rights claims;

2. Repeals the criteria and procedures for water settlements developed by OMB and DOI with Tribal consultation;

3. Allows Tribes to directly contract expert witnesses and data collection for both litigation and negotiations;

4. Creates independent legal counsel for the BIA to eliminate potential conflicts of interest between the Departments of Justice and within the Interior Department's Solicitors Office and other Bureaus;

5. Continues support of working groups on water settlements and eliminates inherent delays in the process;

6. Appropriates sufficient funding to implement the water policy, including the creation of separate Indian water settlement and development funds;

7. Budgets monies to include costs incurred prior to and as a result of water settlement agreements;

8. Supports Tribal and off- reservation water marketing;

9. Supports the measurement of Indian Winters Rights based on a Permanent Homeland concept as well as Practicably Irrigable Acreage (PIA);

10. Supports establishment of a process for Tribes, as preference customers, to participate in and

receive an allocation of low-cost hydropower generated at six-mainstem Missouri River dams;

11. Initiates the process to lift the Interior Department's Moratorium on approval of Tribal Water Codes; and

12. Supports amending the McCarran Amendment to prohibit adjudication of Indian Water Rights in State court proceedings.

Daryl Wright, a Chippewa-Cree from the Rocky Boy Reservation, is Executive Director of the Coalition, and Everett Iron Eyes, a Hunkpapa from the Standing Rock Sioux Indian Reservation, is Assistant Director.

For further information about the Coalition contact: Mni Sose Inter-Tribal Water Rights Coalition, Inc., P.O. Box 226 or 818 East Andrew St., Rapid City, South Dakota 57701, (605) 343-6054.

The Chippewa-Cree Tribe (Montana), and the Chickasaw Nation (Oklahoma) are Tribal entity members of MICRA. All the tribes in the Basin were extended invitation to join. We would welcome their participation.

Source: The Missouri River Report, The Official Publication of the Missouri River Basin Association, P.O. Box 9193, Missoula, MT 59807.

Army Creates Environmental Center

The U.S. Army has reorganized its environmental programs under a new agency called the Army Environmental Center.

Formerly the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) at Aberdeen Proving Ground, Md. The Center will consolidate several functions performed separately, such as environmental restoration, pollution prevention and conservation of natural and cultural resources.

Col. Ralph G. Wooten, THAMA commander since 1991, will command the new Center as the first officer assigned full time to oversee the Army's environmental programs and implement the Army "Environmental Strategy into the 21st Century."

The new Center gives more local environmental support to Army installations and more direct liaison to state and federal regulatory agencies. Col. Brown will implement the Army strategy with four aims: (1) to give priority to compliance with environmental laws and regulations; (2) to restore previously contaminated sites as quickly as funding permits; (3) to minimize or eliminate pollution at the source; and (4) to conserve natural resources for future generations.

Source: Runoff Report, Watershed Information Network News, Vol. 1, No. 1, Spring 1993.

Corps Reorganization On Hold

Secretary of Defense Les Aspin has placed a hold on implementation of the Army Corps of Engineers reorganization plan. The plan was developed under the Bush Administration and was scheduled to begin on February 1, 1993.

The plan involved the elimination of five Corps Divisions, and substantial restructuring of the district offices (See "*River Crossings*" Vol. 1, No. 6). Secretary Aspin's hold on the plan will allow the Clinton Administration to review the plan developed by their predecessors.

The hold on the plan is indefinite, and no schedule for the review has been announced.

Source: The Missouri River Report, The Official Publication of the Missouri River Basin Association, P.O. Box 9193, Missoula, MT 59807.

Clinton's Green Team

According to a recent Washington Post article, the team being assembled to run the Interior Department is as "green and southwestern as a jalapeno pepper.".

Serving under Interior Secretary Bruce Babbitt, and having a large input on nonpoint source pollution policy (if approved in confirmation hearings) will be the following Clinton appointees:

- George T. Frampton, president of the influential Wilderness Society will be assistant secretary for Fish, Wildlife and Parks. Frampton will oversee the National Park Service and U.S. Fish and Wildlife Service.

- Bob Armatron, who pushed a coastal management plan as energy aide to Texas Gov. Ann Richards (D), will be assistant secretary for Land and Minerals Management.

- Elizabeth Ann Rieke, former water and utilities lawyer, and director of Arizona's department of water resources is to be assistant secretary for Water and Science. Rieke will oversee the Bureau of Reclamation and its vast western water projects.

- Bonnie Cohen, a senior vice president with the National Trust for Historic Preservation, is to be assistant secretary for Policy, Management and Budget.

- Leslie M. Turner, a Washington, D.C. attorney, will be assistant secretary for Territorial and International Affairs.

- Jim Baca, New Mexico's land commissioner, is to head the Bureau of Land Management.

- John Leshy, an Arizona law professor with the House Natural Resources Committee, will be department solicitor.

Secretary Babbitt also named:

- Thomas E Lovejoy, the Smithsonian Institution's assistant secretary for external affairs and a conservationist who worked for the World Wildlife Fund, to be his scientific adviser.

Recent White House appointments to the Environmental Protection Agency include:

- Robert Sussman, an attorney, to be deputy administrator.

- Bailus Walker Jr, dean of Oklahoma's College of Public Health and former official with the U.S. Department of Labor, will be assistant administrator for the Office of Research and Development.

- Steven Herman, a Justice Department environmental attorney, is to be assistant administrator for Enforcement.

- David Gardiner, Sierra Club legislative director, is to be assistant administrator for Policy Planning and Evaluation.

EPA Administrator Carol M. Browner named two top aides who do not need Senate confirmation. These include:

- Loretta Ucelli, a presidential campaign operative, to be Browner's chief spokeswoman.

- Robert W Hickmott, a former aide to Sen. Timothy Wirth (D-Colo.) will handle EPA's congressional liaison.

At the U.S. Department of Agriculture, the president has nominated:

- James Lyons, is to be assistant secretary for Natural Resources and the Environment - - the top environmental job at USDA. Lyons, a House Agriculture Committee aide, was an agricultural adviser to OMB Director Leon E. Panetta when Panetta was in the House.

Clinton nominees at the State Department include:

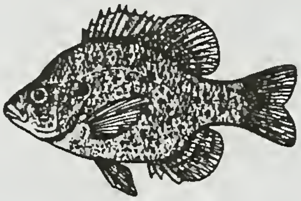
- Elinor Constable, a senior State department economist in the inspector general's office, to be assistant secretary for International Environmental and Scientific Affairs.

Source: Runoff Report, Watershed Information Network News, Vol. 1, No. 1, Spring 1993.

The Redear vs The Zebra

One look at the title of this article and one might think that we're talking about an old Japanese "Godzilla" movie, or a World Wrestling Federation cage match! But no, we're still talking about fish.

Specifically, the redear sunfish, *Lepomis microlophus,* the latest entry in the battle against the zebra mussel in the Great Lakes drainage Basin.



redear sunfish

Since small snails and shellfish comprise a part of the redear sunfish's normal diet, the Michigan Department of Natural Resources (DNR) decided to test use of the sunfish as an ally in the fight to stop the spread of zebra mussels in their State.

The DNR, the U.S. Fish and Wildlife Service, Michigan Sea Grant, and Michigan State University cooperated in a recent study to see whether redear sunfish would eat zebra mussels over other foods. The result: "They would!"

Native to the southern U.S., redears were imported to Michigan in 1956 by the DNR to improve sport fishing for panfish. The sunfish grows to lengths averaging 9 inches, reaching maximum lengths of 14 inches.

Teeth in the back of the redear's jaw act like large molars which can split open shells against the upper part of its mouth. The redear extracts the meat and spits out the shells, much like a person eating sunflower seeds.

In 1984, the DNR began a stocking program in inland lakes along a swath of central Michigan south of Lansing to the Indiana border. Redear may be stocked over a large portion of the State.

Donald Garling, a professor of fisheries and wildlife at Michigan State University, said redears could be a major help in controlling zebra mussels in inland lakes and ponds, but whether many can survive in the Great Lakes is another matter.

Garling said the redear would likely be limited to warmer spots such as Lake St. Clair or Saginaw Bay, and scientists don't k what effect redear would have on other Great Lakes fish. He said the latter is a question that needs to be answered on the international level.

Source: Port Huron Times Herald, January 5, 1993.

Smallmouth Bass Found on Streets in Springfield, Missouri

Taking after a concept developed for the Chesapeake Bay watershed, the Missouri's Household Hazardous Waste Project (HHWP) is launching a statewide program to stencil storm drains to "curb" their improper use for waste disposal. The HHWP stencil displays the image of a smallmouth bass and carries the message, "Dump

No Waste, Drains to Stream".

The Missouri Storm Drain Stenciling Project also involves a litter clean-up and a community education campaign. HHWP is developing this pilot program through a $9,220 grant from the Missouri Department of Natural Resources.

Storm drains are commonly misused for dumping paint, motor oil, antifreeze, pesticides, and other wastes. People are looking for a convenient place to dispose of these items and often are not aware that storm drains lead to nearby streams, rivers, lakes, or even sinkholes. In addition, each time it rains, water runoff carries street litter, yard debris, pet wastes and other pollutants into storm drains.

This nonpoint source pollution is a significant source of contamination of our water resources. The improper use of storm drains for waste disposal is a growing concern across the country. The Washington, D.C. based Center for Marine Conservation (CMC) is coordinating nationwide stenciling efforts in its "Million Points of Blight" campaign.

Information obtained by the Missouri Storm Drain Stenciling Project will be added to the CMC database of storm drain stenciling activities. For more information on the Missouri program contact: Sarah Dewey, HHWP, Storm Drain Stenciling Project, 1031 E. Battlefield, Suite 214, Springfield, MO 65807, (417) 889-5000.

Comprehensive Plan for National Wildlife Refuges

On January 15, 1993, the U.S. Fish and Wildlife Service announced completion of a draft long-term plan to guide management of the National Wildlife Refuge System.

The plan, entitled "Refuges 2003–A Plan for the Future," represents an effort to explore management options for the 91 million acres presently in the National Refuge System .

The system of over 485 refuges in all 50 states is managed primarily to benefit wildlife by providing vital habitat for migratory birds, mammals, fish, endangered species, and a wide variety of other wildlife species.

A combined draft management plan and environmental impact statement, the report represents a new approach to the planning process, offering an in-depth look at the current status of the Refuge system as a whole--its history, the policies and regulations under which it is managed, and its future.

Reader Survey Results

The Mandatory Reader Survey circulated with the Vol. 2, No. 1 issue of "River Crossings" produced 462 responses, all of which checked the box saying, "I like the format of the Newsletter, please keep sending it to me".

Not everyone provided suggestions and additional comments, but quite a few did, so we thought we'd share them with you. They included the following (in no particular order of receipt, priority, editing, or culling to eliminate duplication) - - What you see is what we got:

- Provide highlights by pool or stretch.
- Provide a listing of agency reports.
- Provide a directory of newsletter recipients - especially private groups.
- I like it - keep up the good work.
- Good job - very informative.
- Excellent Newsletter!
- Use two columns and larger print - easier to read.
- I end up not reading long articles.
- I always find something of real interest in "*River Crossings*".
- Keep up the good work, and I hope I can be of help.
- Keep up the good work.
- Keep up the good work.
- Thank you!
- Doing a good job!
- Use lighter color paper.
- Some articles are too long, but that is a minor issue.
- Keep MICRA going!
- Its getting a bit long - cut to 10 pages max.
- It would be good if more Ohio River articles were submitted and included.
- "River Crossings" is extremely important to me and hopefully is extremely important to others who might be in a better position to improve our great resource, the Mississippi River! As a student of the Mississippi River and former striped bass fishing guide on the River I am elated with your publication and its timely message. If I can ever be of any assistance to you please don't hesitate to contact me. More graphics and charts would help explain some subjects.
- I love the variety of articles and pictures!
- I read every word! Excellent publication.
- Good job Jerry - Keep up the good work
- Could you have a regular column on big river fish management ideas, projects successes, failures, etc. The Nebraska article on Missouri River organic waste is an example of an article for the column. My goal is to "plant some seeds".
- Include a Table of Contents or "In This Issue" section at the front of the Newsletter.

- Good balance of agency and nonprofit activities on behalf of the River.
- Wonderful as is.
- Consider an electronic format - ccmail - save some trees. If not use some recycled paper.
- Keep up the good work.
- Include more information on the Arkansas River and other large Mississippi River tributaries (e.g. Ohio River).
- Hide some one-liners, river jokes, and mini-cartoons among the heavy paragraphs; nothing helps reading more than anticipating an occasional smile!
- I find the newsletter very useful and informative.
- Good job Jerry - Keep it going.
- Thanks for preparing it!
- A more balanced assessment of commercial uses of the River System is needed.
- This is the best newsletter I receive - Keep up the good work.
- Thank you - Keep up the good work.
- Use white paper, it is easier to recycle.
- Looks good! How about some details on the Missouri River mitigation work?
- Very good newsletter! I especially like the articles that abuse the refugees and duck meisters!
- This newsletter is a vital resource for resource managers in the Mississippi River Basin (and beyond). Keep up the good work.
- Good source of information for water resources managers!
- It is evident that a tremendous amount of hard work and creative effort is being expended in the production of this newsletter - please accept my thanks and appreciation for the work being done.
- Good format - No changes necessary!
- Thanks for the information.
- Info is good. Brevity is good because we are all trying to stay current on so many issues.
- Keep the "Meetings of Interest" section.
- Suggest larger type on titles, or better division between articles.
- These are important issues and this is one way to keep everyone informed. Thanks!
- Condense articles from UMRCC newsletters just a bit, but it doesn't hurt to read things twice.
- Perhaps members of MICRA's Policy Committee could contribute articles/editorials.
- A map showing drainage area covered under the agreement would be informative.
- Very informative. Thanks.
- It would be interesting to see what research is currently being conducted by natural resource agencies in states within the Mississippi River Basin.
- I am hoping that MICRA can be more informative and effective in regard to information regarding recreation impacts, than UMRCC has been.
- All Congressional offices in the Mississippi River Basin states should be placed on the mailing list.
- I k this is a tough job - keep up the good work. Thanks for sending it to me.
- Keep up the excellent work.
- I'd like to see more current listings of research reports on global warming and ozone depletion.
- Consideration should be given to fishery and energy issues, such as dams, thermal discharges?
- Consideration should be given to the upcoming re-authorization of the Clean Water Act from a fisheries viewpoint?
- Keep up the excellent work. I k how hard it is to produce a newsletter!
- Perhaps infrequent updates could be provided on aquatic species within MICRA's jurisdiction that are being considered for listing under the Endangered Species Act, etc.
- Well done! Doing a great job with pertinent story items and news tidbits.
- MICRA has come a long way!
- Best one yet! Thanks Jerry.
- Newsletter has a northern bent w/conspicuous absence of southern water items. How about regional Assistant Editors mandated to solicit and forward items of interest to the editor.
- I find the newsletter a useful summary of U.S. activity in river management.
- Keep sending the MICRA information, its going well and catching more wind all the time. Good work!
- The March/April issue was especially informative.

Needless to say, the response and suggestions were very encouraging, and we will address as many of your ideas as possible in coming months. You may have already noticed that some of our reader's ideas were put to use with the Vol. 2, No. 2 issue.

One suggestion we hope to focus on is to provide broader, more basinwide coverage, but to do that we need your help. With a "little help from our friends" coverage can easily be expanded. What may be "old" news to you, may be "new" news to someone else, so your help would be greatly appreciated in keeping us abreast of events of river interest basinwide.

One suggestion we're considering is to ask our Policy Sub-Committee members to also serve as "Regional Editors", providing the Coordinator with articles of interest from their respective geographic areas.

In closing, we want to thank all of our readers for responding to our survey, and for the interest and the helpful suggestions provided. They will only make "*River Crossings*" a better, more useful document for everyone!

"Enjoy the Summer!"

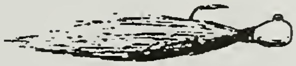
Meetings of Interest

MICRA Steering Committee, June 28, 1993, Kansas City International Airport Holiday Inn, Kansas City, MO, Contact the MICRA Coordinator, (314) 876-1911.

Mississippi River - Past, Present, and Future, Izaak Walton League of America National Convention, July 13-17, 1993, Holiday Inn, Davenport, IA, Contact Paul Hansen (612) 922-1608

Missouri River Natural Resources Committee, August 2-5, 1993, Red Lion Hotel, Omaha, NE, Contact Gene Zuerlein, (402) 471-5555.

Wetlands Engineering Workshop, August 3-5, 1993, Adams Mark Hotel, St. Louis, MO, Contact Chery Lloyd (601) 634-3711.



Status and Management of UMRS Nongame Wildlife "Focusing on the Future", September 8-10, 1993, Radisson Hotel, LaCrosse, WI, Contact Craig Thompson, (608) 785-9014.

Sustaining Ecological Integrity of Large Floodplain Rivers: Application of Ecological Knowledge to River Management, July 12-15, 1994, La Crosse Center and Radisson Hotel, La Crosse, WI, Contact Dr. Kenneth Lubinski (608) 783-7550.

Congressional Action Pertinent to Mississippi Basin Rivers

Biodiversity

H.R. 305 (Porter, R-Ill.) establishes a national policy for biological diversity conservation.

Flood Insurance

H.R. 156 (Deutsch, D-Fla.) requires flood insurance claim payments to include 75 percent of cost of elevating buildings so they will remain eligible for insurance.

Forests

H.R.229 (LaRocco, D-Idaho) requires an inventory of tree health in national forests and directs agencies to develop strategies to manage those forests.

H.R. 432 (Wilson, D-Texas) bars raw log exports from public lands to countries such as Japan that bar access to their markets for U.S. finished-wood products and paper.

Government Operations

H.R. 109 (Boehlen, R-N.Y.) elevates Environmental Protection Agency to cabinet status.

Land Conservation

H.R. 428 (Walker, R-Pa.) excludes value of land with permanent conservation easement from estate taxes.

Military Lands

H.R. 202 (Jacobs, D-Ind.) requires Defense Department to protect natural areas on military bases that are being closed.

Mining

H.R. 194 (Hefley, R-Colo.) withdraws Fort Carson, Colo. from mineral development.

H.R. 322 (Rahall, D-W.Va.) is major mining law reform bill.

H.R. 363 (Smith,D-Iowa) requires Interior Department to develop program to preserve and replace top soil at surface mining projects.

Water and Wetlands

H.R 242 (D-IL.) authorizes $12 billion in public work project spending over three years, including $1 billion annually for wastewater treatment construction.

H.R. 340 (Schaefer, R-Colo.) clarifies waiver of immunity from Clean Water Act regulations at federal facilities.

H.R. 350 (Edwards, D-Calif.) is wetlands reform bill favored by environmentalists that aims to speed up permit processing and offers incentives to private landowners to preserve wetlands.

Wilderness

H.R. 195 (Hefley, R-Colo.) is Colorado Republicans' wilderness proposal, similar to the bill the Senate originally passed last Congress, that sets aside 600,000 acres of BLM and Forest Service land.

Source: Land Letter - A Newsletter for Natural Resource Professionals, Vol. 12, No. 2,3, January 20, 1993.

River Crossings

U.S. Department of the Interior
Fish and Wildlife Service
Large River Fishery Coordination Office
608 East Cherry
Columbia, Missouri 65201

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Volume 2 July/August 1993 Number 4

Congressional Hearing Held On H.R. 2500, Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1993

On August 3rd the Subcommittee on Fisheries Management of the Merchant Marine and Fisheries Committee held a hearing on H.R. 2500, the Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1993.

Gary Matlock (National Marine Fisheries Service), Gary Edwards (U.S. Fish and Wildlife Service), Wes Sheets (Nebraska Game and Parks Commission), Mark Reeff (International Association of Fish and Wildlife Agencies), Paul Brouha (American Fisheries Society), and Norville Prosser (Sport Fishing Institute) all testified in support of the Act. H.R. 2500 would create a National Council on Interjurisdictional Rivers and test fund MICRA over a 3-year period.

The Illinois Department of Conservation and American Waterways Operators (AWO) both submitted written testimony at the hearing. The Illinois Department of Conservation testimony supported the bill, but that of the AWO (the trade association representing the navigation industry) clearly opposed it.

The AWO testimony referred to the National Council as unnecessary bureaucracy and complained of its proposed cost in these days of deficit spending. AWO compared the National Council's proposed $1 million budget to the smaller budget of the Inland Waterways Users Board ($200,000) which advises Congress and the Corps of Engineers on navigation structures on the inland waterway system.

The AWO testimony claimed that navigation projects "created" many of the water areas utilized by the public for recreation and fishing today, but said nothing of the huge cost of maintaining or replacing those navigation structures. As a case in point, reconstruction of the Lock and Dam 26 at Alton, IL in the early 1980's cost the taxpayer over $1 billion.
The AWO testimony also failed to recognize the impacts that navigation projects have had on native fish and wildlife species.

AWO concluded their testimony by saying that they see no reason to fund a costly $2 million "pilot test" of MICRA. AWO suggested just letting MICRA test itself, and then if it works use it elsewhere.

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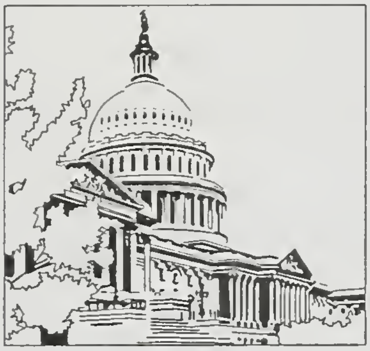
The hearing itself became somewhat of a "buzz saw" for the panel who gave oral testimony, because Congressmen Don Young (R/AK) and Gene Taylor (R/MS) picked up on the AWO position and aggressively cross examined panel members. The panel did an admirable job of countering Young and Taylor's negative arguments, but the controversy did cast doubt on the potential success of H.R. 2500 in its present form.



No one seems to be suggesting that H.R. 2500 is doomed because of the arguments of two Congressmen. Other Committee members remained silent and Chairman Manton seemed supportive. Additionally many other Congressmen will have something to say about the future of this Act.

What does seem sure is that H.R. 2500 will likely surface from the Merchant Marine and Fisheries Committee in a form different from when it was originally introduced. At the hearing it seemed that MICRA will have a better chance of being funded than will the National Council on interjurisdictional rivers. In fact, Congressman Young stated in his opening remarks that we could save a lot of time with this Act if we were to rewrite it to be just a MICRA funding bill and get on with it.

Congressman Young and Taylor didn't seem to be well informed on all of the bill's merits. Supporters of the bill should therefore renew contacts with their respective Congressmen, answer any questions which may come up, and continue to stress its importance to the future of our interjurisdictional rivers' fisheries.

Steering Committee Meeting

The MICRA Steering Committee met in Kansas City, MO on June 28th. Members from nine states and one federal agency attended.

Agenda items included (1) the Paddlefish/Sturgeon Committee's Strategic Plan, (2) the National Framework for the Management and Conservation of Paddlefish and Sturgeon Species, (3) the Interjurisdictional Rivers Fisheries Resources bill, (4) funding of MICRA projects through cooperative Federal Aid projects, and (5) election of new officers.

Kim Graham (Missouri) reviewed comments received on the Paddlefish/Sturgeon Committee's Strategic Plan and commented on how he and the Coordinator had addressed them. The states present unanimously opted to endorse the Plan, but in the absence of MICRA by-laws, decided to conduct a final mail review to gain acceptance by all the states.

The Fish and Wildlife Service's Framework for Paddlefish and Sturgeon Conservation and Management was summarized by Lee Hillwig of the Service's Arlington, VA

River Crossings

Published by

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608 East Cherry
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River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

office. Hillwig explained that MICRA was recognized by the Framework as the coordination point for all federal paddlefish and sturgeon activity in the Mississippi River Basin. He said that for the Framework to be successful, strong endorsement is necessary by all constituents, especially MICRA. It was agreed that while the MICRA Paddlefish/Sturgeon Plan is related to the Service's Framework Plan, the MICRA document should not be viewed as a "step-down" plan.

Discussion regarding the, then soon to be introduced, Cooperative Interjurisdictional Rivers Fisheries Resources Act concluded that strong support for the bill is needed from all the states. The Coordinator agreed to develop informational materials and distribute them to the "*River Crossings*" mailing list as soon as the bill is introduced.

Materials regarding the potential for funding of MICRA projects through the cooperative federal aid program was presented by Bob Adair, Fish and Wildlife Service, Twin Cities, MN. These materials will be sent out to all member states for review. It should be made clear that use of the federal aid program is, of course, up to each individual state.

Wes Sheets ended his term as MICRA Chairman by announcing results of the 1993 election. Jim Fry (Missouri) automatically succeeded to the Chairmanship, Wayne Pollock (Tennessee) was elected Vice Chairman, Frank Jernejcic (West Virginia) was elected to a second term and Mike Conlin (Illinois) and Herb Jones (TVA) were elected to first terms on the Policy Review Committee.

The Steering Committee agreed to pursue development of MICRA by-laws and to form a MICRA Exotic, Transgenetic, and Non-Indigenous Stocking Policy Committee in 1993-94.

The Great Flood of 1993

Flood crests and property damages caused by the Mississippi River Basin floods of 1993 have reached record levels, but the actual amount of discharge contributing to this devastation is well below the historic record level (1,300,000 cfs) which occurred in 1844.

Currently available information suggests that the volume of water at many sites along the Missouri, Mississippi and Illinois Rivers in mid July was 30 percent below previous record flood events. By these standards, the "Great Flood of 93" is more on the order of a 100 year flood event (by volume) than a new "flood of record".

Table 1 displays various historic stages and discharges at St. Louis. You can see from this table that the 1973 "flood of record" (by river stage) passed only a little over 65% of the volume of water of the 1844 "flood of record" (by volume). By volume the 1973 flood ranked only 7th for the period of record. Estimates vary, but it is largely agreed that the 1993 flood passed something on the order of 1,000,000 cfs at St. Louis and crested at a stage close to 50 ft., making the "Great Flood of 1993" the 2nd or 3rd largest recorded flood by volume, and the number one flood of record by stage.

This apparent dichotomy (lower flows producing higher flood stages) is the result of many factors, but channelization of mainstem rivers and their tributaries, floodplain encroachment through construction of levees and dikes, wetland drainage and watershed land use patterns are important contributors which also produce major impacts on fish and wildlife resources.

Watershed development and poor land conservation practices coupled with channelization increase run-off rates. Levees and dikes constrict the floodplain, reduce water storage capacity and produce relatively higher river stages for a given volume of water. When levees are breached or overtopped, the resultant flooding and property damage is much greater than might have occurred had sufficient channel and floodplain storage capacity been maintained between the levees.

Figure 1 depicts a cross section of the Mississippi River at St. Louis showing flood height with levees (1973) and without levees (1844). This figure clearly shows how the levees "squeeze" the river into a narrow channel where the water has no place to go but up. This forces the river's water through a narrow "funnel-like" opening left between the levees, and causes upstream ponding of the river (Figure 2). These "ponded" floodwaters back up into tributaries and onto upstream lands, many of which never flooded before the levees were in place.

Its easy to see from Figure 1 why the devastation is so great when a levee breaks. A wall of water as much as a 50 feet deep, with all the force of water backed upstream, is sent gushing across the once protected area. When this occurs the awesome force of water can sweep away whole houses, destroying everything in its path. This situation was actually caught on tape last month by one of the national television networks. A whole house was just washed away when one of the levees broke!

Without levees, as seen in Figure 1 (1844) the same water is spread out across the entire floodplain causing little structural damage. Channel constriction, federal levees, levee and drainage district levees and private levees account for most of the floodplain encroachment in the Upper Mississippi and Missouri river drainage basins. Much of the decline in Mississippi River Basin riverine fishery resources can be attributed to this loss of habitat. Dikes and levees have isolated the Basin's rivers from historic floodplains, fragmented the river

Table 1. Worst Floods on the Mississippi River at St. Louis

By Volume of Water

Rank	Date	Cubic Feet Per Second	River Stage (in feet)	Type of Flood	River-stage Rank
1	June 27, 1844	1,300,000	41.32	500-year	2
2	June 10, 1903	1,019,000	38.00	100-year	9
3	May 19, 1892	926,500	36.00	50-year	#
4	April 26, 1927	889,300	36.10	40-year	#
5	May 3, 1883	862,800	34.80	30-year	#
6	July 15, 1909	860,600	35.25	30-year	#
7	April 28, 1973	852,000	43.30	30-year	1
8	June 20, 1908	850,000	34.95	25-year	#
9	April 30, 1944	844,000	39.14	25-year	6
10	May 24, 1943	840,000	38.94	25-year	8

By River Stage Readings

Rank	Date	River Stage (in feet)	Cubic Feet Per Second	Type of Flood	Volume Rank
1	April 28, 1973	43.23	852,000	30-year	7
2	June 27, 1844	41.32	1,300,000	500-year	1
3	July 21, 1951	40.28	782,000	20-year	#
4	July 1, 1947	40.26	783,000	20-year	#
5	May 4, 1983	39.27	708,000	10-year	#
6	April 30, 1944	39.14	844,000	25-year	9
7	October 9, 1986	39.13	728,000	15-year	#
8	May 24, 1943	38.94	840,000	25-year	10
9	June 10, 1903	38.00	1,019,000	100-year	2
10	December 7, 1982	37.98	739,000	15-year	#

# Not listed in top 10 of this category

Source: U.S. Army, Corps of Engineers/St. Louis Post-Dispatch

ecosystem into isolated components, reduced nutrient inputs and productivity, reduced habitat diversity, and completely eliminated vast areas of vital spawning and nursery habitat.

Levees became a major point of contention during the 1993 flood because as the Mississippi River flooding moved downstream, it became painfully obvious to homeowners in its path that the levee system was constricting the river and causing waters to back up in tributaries and flood unprotected areas, many of which undoubtedly had never before been flooded.

News reports of levee breaks and the resultant anticipated reduction in flood crest reinforced the fact that the levees were preventing flood waters from inundating natural floodplains, most of which are currently used for agricultural production. These levees were, in fact, adding to flood damages in unprotected areas.

In many instances farmers, intent on keeping their croplands dry, continued pumping interior drainage waters from agricultural levee districts, despite rising flood waters. Some of these pumping systems use pipes 96" in diameter, so in many ways they were like small tributaries contributing to the flood. These interior runoff waters, pumped into an already flood swollen river, contributed significantly to the inundation of neighboring towns and communities.

At Hannibal, Missouri it was reportedly necessary to add two ft. of sand bags to the top of the city's 500-year flood wall in order to protect the city's historic district. This, in order to keep pace with the raising of ag levees across the river in Illinois. As each levee was raised, flood waters just kept rising in other

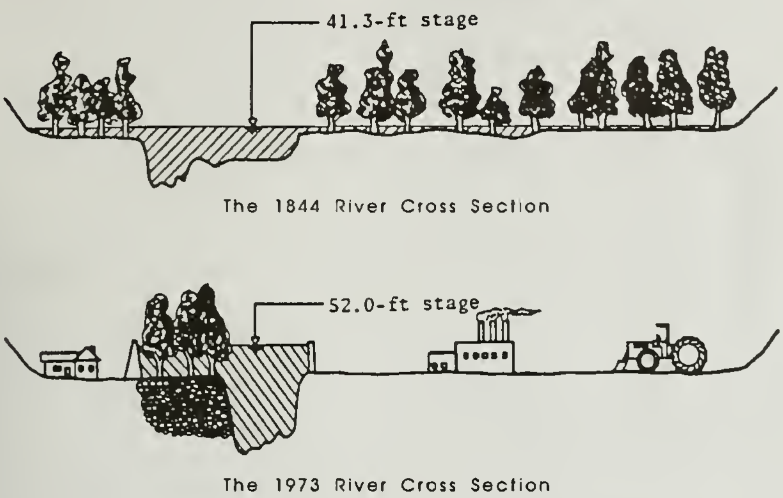


Figure 1. Cross section of the Mississippi River at St. Louis as it might have appeared during the record flood of 1844 (1,300,000 cfs) and as the same flood appeared in 1973 with the levee system in place (Simons, et al., 1975).

areas; each levee district, city or town frantically tried to build higher and higher levees.

Eventually, however, the waters just got too high and the levees began to fail, one by one, some that protected towns and villages and some that protected ag land. As each levee broke, neighboring towns and levee districts breathed a temporary sigh of relief as flood crests dropped, almost instantaneously by as much as two feet. In fact, in one instance near Quincy, Illinois, farmers complained that an agricultural levee had been deliberately sabotaged by some unknown person, causing inundation of thousands of acres of cropland. Whether or not such sabotage occurred is unknown, the incident remains under investigation. But this incident illustrates the recognition by farmers that their levees were, in fact, viewed by other citizens as contributing to the problem.

Agricultural levees bordering the Mississippi and its tributaries were originally designed to be breached at flood stages lower than those protecting cities, towns, and industrial installations. However, instead of being breached at the appointed river stage, many of the levees were raised by as much as 8 ft. by panicked farmers in a futile effort to keep floodwaters off of their fertile croplands.

The flood of '93 was indeed a "battle of levees. It pitted land owner against land owner in a race to see who could raise their levee high enough to beat the rising waters." Most of the flood damage on the Upper Mississippi occurred between Dubuque, Iowa and Cairo, Illinois. Upstream from Dubuque there are few levees and downstream from Cairo the river's channel is not as constricted and thus is allowed to widen out into a federally maintained floodway (wide enough to accommodate all the flow without loss of property or massive destruction).

It is important to note that the damage caused by the Flood of 1993 did not come without warning. As long as 142 years ago Charles S. Ellet, Jr., a civil engineer criticized the building of levees in the Mississippi River Basin. Mr. Ellet wrote a report to Congress in 1851 stating that:

(1) Levees increase the height of flood levels by constricting the river and forcing water to flow higher and faster, and

(2) they encourage development of the flood plain.

Congress refused to listen, and the farms, businesses and houses that were built on the floodplain behind levees became sitting ducks for the inevitable floods that occurred again this year.

Since the days of Mr. Ellet, geologists,

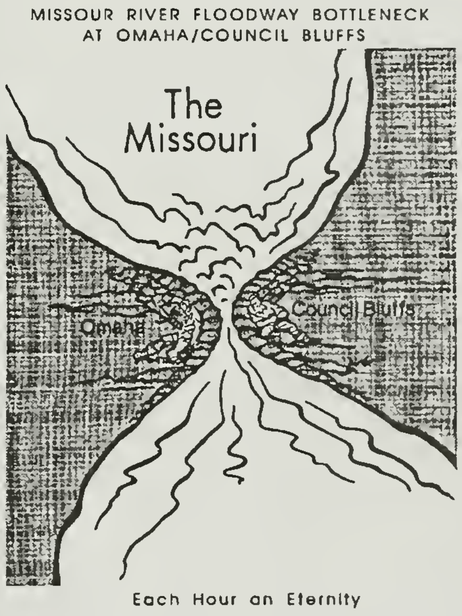

MISSOUR RIVER FLOODWAY BOTTLENECK AT OMAHA/COUNCIL BLUFFS
The Missouri
Omaha
Council Bluffs
Each Hour an Eternity

Figure 2. Adapted from Omaha World Herald editorial cartoon by Barrow, April 17, 1952 (Missouri River Basin States Association 1983).

biologists, and environmentalists alike have continued to argue against the ills of floodplain development and levee construction.

In 1953, after the great 1951 flood, Dr. Walter Kollmorgen, geographer at the University of Kansas made the following observations:

- Urban and industrial losses would be largely obviated by set-back levees and zoning, and thus cancel the biggest share of the assessed benefits which now justify big dams.

- Farm improvements in valleys several miles or less in width would be zoned to flood-free elevations and therefore cancel the second highest assessed benefits which now largely justify the big dams.

- Crop losses on wide floodplains would be mitigated by damming narrow tributary valleys -- largely V-shaped valleys -- but occasional losses would be accepted on this usually highly productive land.

- Land and soil destruction by flooding is largely a myth and therefore does not justify flooding out one set of farmers behind dams to save another set of farmers below the dams.

- Water navigation on the Missouri as a cheap mode of transportation is a total myth and justifies no expenditures whatsoever.

Geologist Charles B. Belt Jr. of St. Louis University studied the flow of the Mississippi during the flood of 1973, and compared it to flows in pre-levee days. Belt warned against the threat of future flooding. The 1973 flood crested at 43.3 feet at St. Louis; the flood of 1993 broke that record stage by 6-7 ft.

The St. Louis Post Dispatch quoted Mr. Belt as saying "The levees in '73 caused the water level to be about 8 feet higher than it would have been in the 19th century. Floods are not caused by man", he said. "They're caused by rain. But the fact of the matter is, in '73 the flood record here at St. Louis was manmade."

The Post Dispatch quotes Roger Pryor, Coalition for the Environment, as saying much the same thing about the Flood of '93. "They've been referring to this as a disaster caused by nature. This is human caused, and that's the real disaster here."

Pryor says that government projects have played a vital role in the destruction totals. "The Corps builds better levees; they are spending our money," he said. "Those levees don't fail, but they contribute to flood height, which causes the other levees upstream to fail."

According to the same Post-Dispatch article, St. Louis District, Corps of Engineers officials didn't accept any responsibility for the flooding. Gary Dyhouse, District hydrologist, was quoted as saying, "...if levees result in flood plain development, that's a concern for the local governments, which pass the enabling zoning laws." He said further that, "The federal government is not in the land-use zoning business. All the Corps levees were built to protect development that's been there for a long time. Granted, though, once you get protection for land behind a levee it becomes more attractive to development."

Environmental groups across the nation are calling for the government to reconsider federal flood insurance programs, and to discourage building on the floodplain. They also suggest that the levee system be rebuilt to allow part of the flood plain to revert to wetlands to act as relief valves for floodwater. Farming and recreation may be allowed, but no structures.

Sources: St. Louis Post-Dispatch; USA Today; Simons, D.B., et al. 1975. The River Environment - A Reference Document. U.S. Fish and Wildlife Service. Contr. No. CER 75-76, DBS-PFL-YHC-SAS-14.; Missouri Basin States Association. 1983. Missouri River Flood Plain Study - Final Report, Billings, MT.; and Kollmorgen, W.M. 1953. Settlement Control Beats Flood Control. Economic Geography, Vol. 29, No. 3, pp. 208-215.

Corps Appoints Flood Czar

Army Chief of Engineers Lt. Gen. Arthur E. Williams named Brig. Gen. Albert J. Genetti Jr., on August 4th to coordinate flood recovery efforts of the U.S. Army Corps of Engineers throughout the Middle and Upper Mississippi and Missouri River Basins.

Genetti, currently commander of the Corps' Ohio River Division in Cincinnati, has been appointed Deputy Director of Civil Works for the Middle and Upper Mississippi Basin. He will head a St. Louis based team of 30 Corps professionals to oversee the inspection and restoration of levees and other flood protection works under the authority of Public Law 84-99.

"This extraordinary flood event, which caused extensive damage over such a wide-spread area, demands a rapid, coordinated engineering effort that is responsive to all those communities affected by this national tragedy", Williams said General Genetti will bring compassion, environmental concern, engineering skill and a sense of urgency to this vital recovery effort."

Genetti and his team will develop a strategy and management plan for Corps' efforts in the disaster area. The team will coordinate the efforts of three engineer divisions and six engineer districts directly involved in this recovery.

Additionally, the team will work closely with other federal agencies and state and local officials to ensure understanding of and compliance with Public Law 84-99 during the restoration of federal and eligible nonfederal flood protection works to pre-flood condition.

Public Law 84-99, Flood and Coastal Storm Emergencies, authorizes the Chief of Engineers, acting for the Secretary of the Army, to perform emergency operations for both flood response and post-flood recovery activities and rehabilitate flood control works damaged by flood.

Izaak Walton League of America Tells Senate Panel That the Corps of Engineers "Mismanages" the Mississippi

The director of the Izaak Walton League of America's (IWLA) Midwest Office told a hearing before the U.S. Senate Subcommittee on Clean Water, Fisheries and Wildlife on August 4th, 1993 that the Corps of Engineers has mismanaged the Mississippi River.

The IWLA recommended that a panel be convened under the auspices of the National Academy of Sciences to evaluate river management and advise Congress on future planning on the river.

"I am here today, not to tell you that I have all the answers to the management questions raised by the flood waters, but to tell you that we need answers to these questions before we embark on the enormous federal spending that will be required to restore the Mississippi in the aftermath of the flood," said Paul Hansen, director of the IWLA Midwest Office. "I am here with one simple suggestion and request, that you require the Corps to divert a significant portion of their action "feasibility" study to conduct an independent analysis of the management of the Mississippi with the National Academy of Sciences." This report can then be used by Congress and the President to determine the most cost-effective means of managing the Mississippi in the future – for flood control, for the environment, and for navigation. The extensive damage caused by these floods serves to highlight the fact that the U.S. Army Corps of Engineers manages the Mississippi in a manner that sacrifices the multiple purposes of river management to the single purpose of navigation.

'Such a comprehensive and independent study could be completed for a fraction of the $33.6 million now being spent by the Corps on "feasibility" studies for the single purpose of a major navigation capacity expansion – a project that is deemed "unwise" and "not justifiable" by the only independent and academic analysis that it has been given (by the University of Iowa's Public Policy Center).

THE IZAAK WALTON
LEAGUE OF AMERICA

'While the floods of 1993 would have been devastating to human development on the historic floodplain under any river management scheme, they have clearly been made worse by the drainage of wetlands, channelization of the river and construction of levees."

The IWLA also made the following recommendations for changes in the Clean Water Act which they feel would benefit the Mississippi River:

- Providing a special designation for the Mississippi River. In previous revisions of the Clean Water Act, Congress has provided special designation for the nation's largest lake system and the nation's largest estuary. Special status for the Great Lakes and the Chesapeake Bay have vastly improved the management of these water bodies. It is time to extend this to the nation's largest river system.

- Encouraging a watershed-based approach to protection and restoration of waterbodies. To be successful, efforts to protect and restore the Mississippi and most other waterbodies must be based on watershed strategies that account for land uses in the watershed and their downstream impacts. Water quality protection efforts in this country are moving in this direction, and changes are needed in the CWA and its programs to reinforce this approach.

- Dealing more effectively with polluted runoff. Current totally voluntary approaches to non-point source problems are simply not working in the Mississippi basin. The country needs to lean more toward limited regulations that will provide the enforcement tools necessary to back up other approaches. Possible watershed-based models for dealing with polluted runoff more effectively are the new Coastal Zone Act Reauthorization Amendments (CZARA) to the Coastal Zone Management Act (CZMA), which attempt to encourage coastal states to take a more active approach to addressing non-point source threats, and the

proposed Oberstar polluted runoff bill, H.R. 2543.

- Strengthening wetland protection. The 404 wetlands sections of the current Clean Water Act must be revised or completely restructured to provide increased protection to wetlands, including taking cumulative losses into account.

- Fostering citizen participation. A certain amount of, Section 319 Non-point funds should be allocated to fund volunteer water monitoring programs that build citizen awareness, knowledge and support for their waterways. In addition, an urban watershed restoration project is needed to assist citizens groups in urban areas where low-income and ethnic minorities often use dangerously polluted sections of the River and its tributaries for subsistence fishing and other purposes.

- Improving procedures for setting standards. Standards should incorporate meaningful biocriteria that indicate the health of ecosystems much more effectively than numeric standards. In addition, better coordination of monitoring and standard setting is needed that considers cumulative impacts and overlapping permitting by multiple jurisdictions.

- Strengthening enforcement of current Clean Water Act provisions. Enforcement of the Clean Water Act should be strengthened by establishing mandatory minimum penalties for serious violations, based on current U.S. EPA and New Jersey Clean Water Enforcement Act definitions that reduce economic gains enjoyed by violators. In addition, discharge reporting and inspections should be increased, and current obstacles to citizen's suits removed.

- Restoring aquatic ecosystems. The National Research Council's report Restoration of Aquatic Ecosystems (National Academy Press, Washington, DC, 1992) should form the basis for the design of a national aquatic ecosystem restoration strategy. Aquatic ecosystem restoration projects should be designed to sustain and enhance the diversity of native species and ecological communities on a regional scale.

The IWLA has been deeply involved in Mississippi River conservation issues since 1924, when the League sponsored legislation to establish the Upper Mississippi National Wildlife and Fish Refuge.

Contact: Paul Hansen, Director
Midwest Office, Izaak Walton League of America, 5701 Normandale Road, Suite 210, Minneapolis, MN 55424.
(612) 922-1608.

American Rivers Blames the Floods of '93 on Environmental Tampering

"With severe flooding along the Mississippi River expected to continue for several more weeks, it is timely and important to point out that the increasing severity of these floods over the years is, to a large extent, rooted in environmental tampering and ignorance of the river's natural cycles.

American Rivers

'The problem along the Mississippi and elsewhere is not simply that it's been raining a lot. The Mississippi River today is not the Mississippi of years past. And the same is true for rivers across the country. We have destroyed large portions of the natural vegetative strips along rivers, dredged and straight-jacketed rivers, and damaged their natural flow patterns with numerous dams and levees. In fact, the engineering by the U.S. Army Corps of Engineers, which was supposed to reduce flooding, has instead made flooding problems worse over the years, and has given people living near rivers a false sense of security. Consequently, when the rains come, there is precious little vegetation and natural river bends left to slow and absorb floodwaters. The rain water no longer spreads over the flood plain to nourish the riparian land, and causes problems, instead."

Contact: Randy Showstack, American Rivers, 801 Pennsylvania Ave., S.E., Suite 400, Washington, D.C. 20003, (202) 547-6900.

Coalition for Aquatic Ecosystem Restoration Develops Mississippi River Watershed Restoration Strategy

The Coalition for Aquatic Ecosystem Restoration, an organization of non-governmental organizations (NGOs), met on August 3rd in Washington, D.C. to discuss Mississippi River flooding and a Watershed Restoration Strategy.

The meeting was headed by the World Wildlife Fund and the Environmental Defense Fund. The Coalition's principles related to restoration of aquatic ecosystems follows:

- The National Research Council's report Restoration of Aquatic Ecosystems (National Academy Press, Washington, D.C., 1992) should form the basis for the design of a national aquatic ecosystem restoration strategy.

- Aquatic ecosystem restoration projects should be designed to sustain and enhance the diversity of native species and ecological communities on a regional scale.

- Federal and State agencies and/or non-governmental organizations should perform regional surveys of aquatic ecosystem restoration opportunities throughout the United States. Such surveys should take into account the hydrology, geology, topography, climate, soils, chemistry, and biological communities within each watershed studied.

- All Federal agency programs should take advantage of restoration opportunities. An examination of existing Federal programs to identify potential alterations that would facilitate restoration programs should be performed. Federal agencies, non-Federal agencies, and non-governmental organizations should be encouraged to work collaboratively as a cost-effective means to achieve restoration.

- The Federal government should establish programs in the U.S. Environmental Protection Agency, U.S. Department of Agriculture, U.S. Department of Interior, U.S. Army Corps of Engineers and other agencies to provide technical assistance and grants in aid to local units of government and non-profit organizations to facilitate collaborative watershed and aquatic ecosystem restoration and protection projects.

Contact: Tim Searchinger or Jim Tripp,, Environmental Defense Fund, 1875 Connecticut Avenue, NW, 10th Floor, Washington, D.C. 20037, (202) 387-3500, or Constance Hun, World Wildlife Fund, 1250 Twenty-Fourth St., NW, Washington, D.C. 20037-1175, (202) 293-4800.

Coalition for Aquatic Ecosystem Restoration Meets with Gore and Babbitt

The Coalition for Aquatic Ecosystem Restoration met with Al Gore and Bruce Babbitt to discuss actions and strategies the federal government should take in response to the 1993 flood.

Everyone agrees that the victims of this year's flooding should be provided appropriate assistance, but the method of controlling future flooding should be given serious evaluation.

Gore and Babbitt reportedly agreed that the U.S. Department of the Interior should play a lead role, at the federal level, in developing an action strategy to address the flooding issue as it applies to the long term response.

In other words, a "heads-up" approach should be developed early on to avoid over reaction in the hurry to repair flood damages. Such over reaction to the emotional side of the issue could result in repeating the mistakes of the past. Such an action strategy is presently being drafted, and the MICRA Coordinator, among others, has been asked to participate.

The River Floodway Concept A Reasonable and Common Sense Alternative for Flood Control

The lengthy quotation which follows builds a good case for implementation of the floodway concept on the Missouri River. It was taken from the following document: Missouri Basin States Association. 1983. Missouri River Flood Plain Study - Final Report, Billings, MT.

"The need for increased levels of flood plain management along the Missouri River has been recognized by state and federal water resource planners and managers for many years. Development of the flood plain along 753 river miles, covering nearly 2 million acres in five states (South Dakota, Iowa, Nebraska, Kansas, and Missouri) has given rise to a wide variety of management problems. Of fundamental concern to flood plain planners and managers, is the slow but continual loss of floodway conveyance capacity and evidence that river stages are increasing during periods of flooding. This loss has been attributed to bank stabilization and navigation structures, accretion of land in and along the channel, construction of agricultural and other private levees within the floodway, and construction of facilities in the floodway that are related to public, commercial, or industrial development. The weak, fragmented and inconsistent legal and administrative framework has been another major concern. Authority for management of the flood plain is divided vertically among various levels of governments, geographically by five states, and functionally through various state and federal agencies which makes it difficult to achieve a coordinated, compatible approach.

'In the study area, encroachment takes the form of residential, commercial, industrial and farm structures, transportation and utility systems, levees and river control structures, and recreational facilities. Throughout the study area, the bank stabilization project has been the most pervasive improvement which has reduced the carrying capacity of the channel and floodway. Through it, the overall channel width has been progressively narrowed, and numerous secondary channels (chutes) have either been silted in or closed off by successional processes into forested or other wetlands. The lateral dikes induce increased hydraulic resistance along the banks and have also narrowed flow width. Furthermore, the channel areas land ward of the protruding dikes have progressively filled, creating accretion land. This land is then converted to crop land, which then is often protected by levees.

'Analysis of discharge/stage trends plotted over the past 30 years provide an indication of the effect of encroachments on the flow characteristics of the channel and adjacent over bank areas. These curves between Omaha and the mouth indicate rotation, with stages shifting upward in the higher discharge range. In Reach 2, the Nebraska City gaging station is illustrative. At normal flows of 30,000 to 40,000 cfs, stages have been constant over time. At 100,000 cfs, however, there has been a 4 to 5 ft. rise since the 1930's. In addition, channel capacity has been reduced from 150,000 to about 90,000 cfs. At St. Joseph in Reach 3 a similar trend was observed, although a channel cutoff does confuse the situation somewhat. In Reach 4, for conditions near bankful at 200,000 cfs, rises of 2 to 3 ft. are indicated at the Waverly and Boonville gaging stations. At Hermann, while no clear indication of a rising trend occurs at flows 300,000 cfs or less, a 3 to 4 ft. increase is indicated at discharges of 400,000 to 500,000 cfs. Near the mouth of the river, the Missouri River Flood Plain River Stage and Levee Inventory Study did not analyze stage/discharge trends- or project estimated effects of the 1844 flood onto today's condition. However, data in the 1974 Baseline (Vol. II) study by the Corps of Engineers, Kansas City District, indicates that the 1844 flood would now crest about 10 ft. higher at Boonville and 12 ft. higher at Hermann. An unpublished river stage/discharge study by C.B. Belt, Washington University (1980) provides data at St. Charles. It was estimated that a 5 ft. stage increase would occur under a bankful discharge of 200,000 cfs, while a 7 to 8 ft. stage rise would occur at 500,000 cfs.

'Historically the Pick-Sloan plan and the bank stabilization and navigation project have been the catalyst for development along the Missouri River. They did not, however, provide a comprehensive approach to flood plain management or development. The Pick-Sloan Plan was authorized to provide a 3,000-ft. flow way from Sioux City, Iowa to Kansas City, Missouri and a 5,000-ft. flow way from Kansas City to St. Louis. The concept was structural in approach as Congress did not contemplate supplemental regulation. While the plan progressed in the 50's and 60's, it ground to nearly a standstill in the 70's, largely due to economic considerations and lack of local acceptance by levee districts and a few landowners along the riverbank who would be adversely affected. By contrast, the bank stabilization project did not encounter difficulties and was completed in 1980.

'As an operational flood plain management tool, the Pick-Sloan Plan is no longer considered viable because: (1) adequate returns in terms of flood loss savings do not exist for structural measures, and (2) the NFIP (National Flood Insurance Program) approach, nonstructurally oriented, is now being emphasized..."

The flood of 1993 may change this!

"...The Pick-Sloan Plan utilized the concept of equal and opposite levee setback for flow way encroachment, or the idea that equal amounts of land on opposite sides of the river would be dedicated to flow way purposes. Under this concept, the property owners can easily determine how far they can encroach into the flood plain as a levee defines the floodway border. The bank stabilization project was not conceived to provide either flood plain management or flood control benefits. However, it did stabilize the banks, prevented the destruction of considerable development from bank erosion, and has made the flood plain appear a safer place for development"

The Pick Sloan Plan which created the large Missouri River reservoirs in the Dakotas and Montana thus also authorized a floodway from Sioux City, IA to the mouth at St. Louis, MO. As stated in the above quotation from the Missouri Basin States Association, this floodway was not completed, in large part, because of landowner opposition. These same landowners will now (in 1993), undoubtedly look to the government to assist in the recovery of private lands and property that perhaps could have been protected had the proposed Pick-Sloan floodway been implemented.

The following questions thus beg to be answered:

(1) Should society pay flood damages to landowners who are reported (by the Missouri Basin States Association) to have prevented completion of the Pick-Sloan floodway?

(2) Should the Pick-Sloan floodway be implemented now to prevent future losses?

The latter seems to be the "common sense approach" to future flood damage reduction. Large portions of the Missouri River floodplain between Sioux City and St. Louis experienced extensive flooding in 1951, 1952, 1973, 1984, and 1986; and now again in 1993. When is enough, enough!

Pick-Sloan should thus be re-evaluated in light of the current flood, environmental considerations, increasing flood stages, and escalating damage claims. Implementation of the Pick-Sloan floodway would not only provide flood control benefits, but significant benefits to fish and wildlife species; possibly even heading off the impending listing of endangered species.

The floodway (Figure 3) authorized by Pick-Sloan between Sioux City, Iowa and Kansas City, Missouri was 3000 ft. wide. Average width of the Missouri River channel in that reach is 700 ft., leaving 2300 additional feet needed to complete the authorized floodway (in theory 1150 feet on each side of the river). This corridor, stretched over the 383 mile reach in question totals 106,857 acres in area.

Pick-Sloan authorized a 5,000 ft. flood way from Kansas City to the mouth at St. Louis. Average width of the River channel in this reach is 1200 ft., leaving an additional 3800 feet needed to create the authorized floodway (in theory 1900 feet on each side of the river). This corridor stretched over the 367 mile reach in question totals 169,042 acres in area.

Total acreage authorized for a floodway from the head of navigation, just above Sioux City, Iowa to the mouth is thus 275,899 acres. This would provide a significant amount of flood storage capacity.

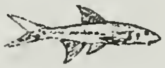
Missouri River bank stabilization and navigation projects have caused the direct loss of 100,300 acres of aquatic and 374,300 acres of terrestrial habitat in the floodplain between Sioux City and St. Louis. Those losses have occurred in the 300,000 acres formerly covered by the natural river and an adjacent 364,000 acres of active floodplain erosion zone.

Channelization has also shortened this reach by approximately 127 miles (1980 USFWS Coordination Act Report). Much of this loss is attributable to accretion of land in formerly diverse floodplain habitat and its subsequent conversion to private land and intensive agriculture. The vast majority of this land is now also protected by levees which contribute to further floodplain encroachment, development and habitat losses.

Aquatic riverine habitat losses have directly impacted native Missouri River fishes. The pallid sturgeon is federally-listed as endangered and five other species (lake sturgeon, paddlefish, sicklefin chub, sturgeon chub and blue sucker) are C-2 candidates under review for listing. Many other native Missouri River fish stocks are severely depleted.

River biologists generally equate the current threatened status of these fish stocks to losses in quantity and quality of habitats such as sloughs, chutes, backwaters, braided channels, wetlands, etc. Isolation of the river from its floodplain through levee and dike encroachment and flow modification to eliminate the natural hydrograph (periodic seasonal flood pulses) have reduced nutrient and carbon inputs, while restricting access to seasonally flooded spawning and nursery habitat. The result is an expanding list of endangered, threatened and depleted fishes.

There are two essential elements to achieve optimum restoration and recovery of Missouri River fish stocks. The first of these is re-establishing some measure of the natural hydrograph which includes a spring flood pulse. The Corps of Engineers Master Manual review (currently underway) is looking at a large number of Missouri River operating alternatives. Some of these are environmental quality (EQ) alternatives which require implementation of a modified natural hydrograph.



sicklefin chub

The second essential element is to restore and re-create quantity and diversity of riverine habitats and insure access to seasonal habitats and nutrient inputs through overbank flooding. This can best be accomplished through implementation of a floodway concept (Figure 3) involving setback levees to provide floodway capacity as envisioned in the original Pick-Sloan Plan.

The estimated costs of implementing

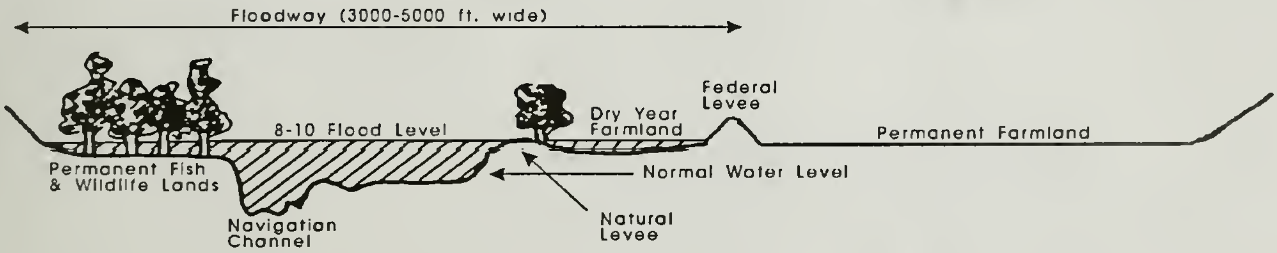
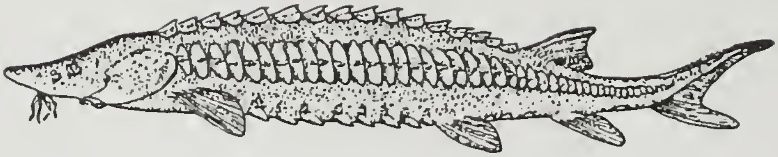


Figure 3. Hypothetical floodway showing various possible land uses. Any mix of the navigation channel and other land use could occur along any given river reach.

the floodway concept are great, but shrink quickly in comparison to the estimated $12 billion dollars needed for damage recovery from the 1993 flood, and to the $25 billion [reported by the Kansas City Star (7-17-93)] spent by the Corps of Engineers since 1927 to build the existing levees, dams, and channels along the Mississippi River and its tributaries.



lake sturgeon

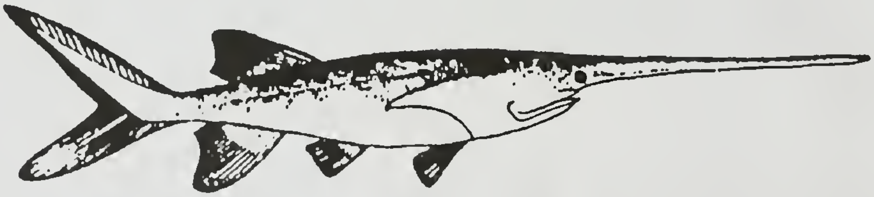
Fee title acquisition of the entire Missouri River floodway would involve 275,899 acres at an estimated cost of $231,755,160. Flood easements could be used in lieu of acquisition on some lands, thereby allowing it to remain in agriculture, but subject to periodic flood losses. Additional costs may be incurred for levee construction at the limits of the designated floodway.

blue sucker

Cost estimates are based upon recent acquisitions of $1,100/acre for levee protected cropland, $600/acre for unprotected cropland and $300/acre for forest, wetland and shrub land. It is further assumed that approximately 60% of the acreage is in levee protected cropland, 20% is unprotected cropland and 20% is forest, wetland, shrub, etc. A quarter of a billion dollar investment in such a floodway is thus a rather reasonable and insignificant one-time cost for future protection against repeating the estimated billions lost to this flood.

The "Great Flood of 93" can thus provide a rare opportunity to serve the national interest by re-evaluating and pursuing the long overdue floodway alternative on the Missouri and other large rivers, while avoiding future human and economic loss. Many costly and pervasive problems could be resolved in this single, all-encompassing action.

Recurrent flood damages, economic losses and government disaster relief costs would be greatly reduced or eliminated. Many natural resource and endangered species issues could be resolved without the great expense and controversy of listing. Most of the economic values associated with the river such as recreation, water supply and hydropower would be unaffected or enhanced. Flood control would be enhanced, but there would be some loss of navigation benefits and agricultural production within the floodway. Some of this could likely be mitigated by providing for agricultural farming leases in dry years when water in the system does not occupy the entire floodway.



paddlefish

Implementation of the floodway concept also provides a grand opportunity to implement national objectives for biodiversity and ecosystem based management, while avoiding another of the costly, divisive and controversial "train wrecks" Interior Secretary Babbitt has referred to in reference to the spotted owl/developmental issue in the Northwest.

The current flood was, without a doubt a great human and economic disaster, however, if our leaders chose, the flood can also provide the stimulus necessary to focus public attention on an opportunity to get out in front of the flooding problem, and address many controversial issues at one time. Implementation of some form of the floodway can do just that. Strong, decisive leadership at state, local, and federal levels will be needed to make this happen!

Large River Fishery Resources Flood Impact Assessment Proposal

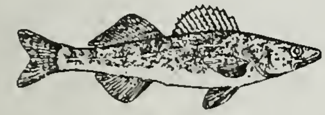
Extensive flooding throughout the midwest has set new records for river stages, property damage and agricultural crop losses. The Upper Mississippi, Missouri, and Illinois rivers and their major tributaries have all been affected.

From a fisheries viewpoint, the "Great Flood of 93" may, however, have been one of the most beneficial events in recent history. Flooding is the fuel which maintains and renews the dynamic equilibrium of large river ecosystems. Flood timing and duration may not have been ideal for all species, but measurable benefits for many fish populations and communities are anticipated.

The levees that were breached provided access for these fish to historic floodplain spawning habitats. These habitats were not just inundated by a single "flash" event, but by waters that came up and stayed up throughout the summer. Young hatched this summer have had time to complete their first growing season before the rivers receded.

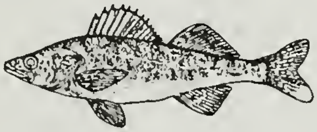
A multi-year management survey of fishery resources of the Missouri, Mississippi and Illinois River and selected tributaries is being proposed by Region 3, U.S. Fish and Wildlife Service biologists to document the fact that spring and early summer flooding restores some measure of the natural hydrograph, reconnects the river to vital production areas, and increases diversity and quantity of essential habitat. If providing access for large river fishes to backwaters and floodplain habitat through breached levees and dikes can help restore depleted fish stocks, the results should be directly measurable by standard fishery management indices such as year class strength, young of the year abundance, young/adult ratios, condition factors and growth rates.

A project designed to collect information for evaluating these indices is being recommended by the Fish and Wildlife Service's Columbia, Missouri; Winona, Minnesota; and Carterville, Illinois Fishery Resources Offices (FRO's).



Federal trust fishery resources such as endangered, threatened and candidate species, fish populations associated with National Wildlife Refuges impacted by flooding, and interjurisdictional fisheries resources would be targeted. The project would also attempt to assess impacts on mainstem and selected tributary riverine fish communities as a whole.

The project would be coordinated with the states and other entities through the Service's Region 3 Large River Fisheries Coordination Office, Mississippi Interstate Cooperative Resource Agreement (MICRA), Upper Mississippi River Conservation Committee (UMRCC), and Missouri River Natural Resources Committee (MRNRC). It is anticipated that individual state biologists would want to participate at different levels of the project.



The proposed efforts would be compatible with and complimentary to assessments being conducted by others. Data collected routinely by the Mississippi River Long Term Resource Monitoring Program (LTRMP) field stations would be utilized when applicable, but the proposed effort would go well beyond the geographic area and regimented approach of LTRMP which restricts their work to a few designated Mississippi and Illinois river pools. Relevant data collected by any other agencies or programs throughout the affected area would be incorporated to the maximum extent possible.

The "Great Flood of 93" thus provides a rare, perhaps once in a lifetime, opportunity to evaluate potential benefits of floodplain habitat restoration on depleted large river fishery resources at a grand scale. It also provides an opportunity to gather information which may support Fish and Wildlife Service objectives of biodiversity and ecosystem based management strategies for restoration and maintenance of Federal trust resources on large interjurisdictional rivers. These unique circumstances will likely not recur for many years.

Individual states are encouraged to support this effort through individual cooperative efforts, or by jointly participating in a coordinated federal project. More information can be obtained on the project from Jim Milligan or Jerry Rasmussen at (314) 876-1911. Information on joint participation by the states through cooperative federal aid projects can be obtained from Bob Adair (612) 725-3596.

Pallid Sturgeon - "The Spotted Owl of the Missouri River?"

As the Missouri and Mississippi rivers return to normal, according to an article in the St. Louis Post-Dispatch (7-18-93), the rivers' barge industry fears another--potentially deadlier--foe: "the pallid sturgeon".

The pallid sturgeon makes its home in the Missouri and lower Mississippi rivers and is listed on the nation's endangered species list. That endangered status, says the Army Corps of Engineers, may force the Corps to reduce the water presently being released from upriver dams to keep the Missouri River navigable in downstream states.

According to navigation interests such a cut also could affect the Mississippi River, and its barge traffic south of St. Louis, because the Missouri River is the largest tributary of the Mississippi.

The Corps is considering a plan that would reduce the flow of the Missouri River every August and September -- an act that it acknowledges could affect commercial navigation downstream during those months.

The idea is to recreate the Missouri River's natural hydrograph, with heavier flows in the spring and lighter flows in the late summer than occurs under the presently controlled situation.

The Corps says that this change could aid the spawning of the pallid sturgeon and other upstream fish that are also in short supply. Opponents, including Missouri, Iowa and Kansas navigation interests, contend that an August-September shutdown would destroy commercial navigation on the Missouri River because barge companies say they can't stay in business if they can't ship during those months. The result, opponents say, would be increased transportation costs for Midwestern farmers and others who rely on rivers as the cheapest way to transport their products.

Supporters of a more natural hydrograph disagree, saying the river would still be navigable in the Spring to bring fertilizer upstream, and in the Fall to carry harvested crops downstream. It also may be navigable at shallower than 9-foot draft, even during August and September.

The downstream states accuse the Corps of Engineers of using the pallid sturgeon as a ruse to help upstream states, which have been clamoring for years for more water in their lake reservoirs to bolster their recreation industry.

pallid sturgeon

"The issue is still recreation upstream vs navigation and flood control downstream," said Marc Solomon, legislative aide to Sen. John C. Danforth, R-MO., who is among those leading the opposition.

The Corps denies any subterfuge. It says it is considering several alternatives as it decides whether to stay the course or make changes in its management of the Missouri River and its six upstream dams and reservoirs.

But, in fact, the pallid sturgeon's endangered species status may leave the Corps few options in choosing an approach, says Col. John Schaufelberger, commander of the Corps' Missouri River Division. "It's native fish vs. navigation," he said. "In my personal view, this dispute is like the one in the Pacific Northwest between the spotted owl and timber industry."

Some Missouri officials disagree. Ron Kucera of the state's Department of Natural Resources concedes that the pallid sturgeon is rare. But he says the fish needs changes in its habitat that have little to do with changing the flows in the Missouri River (Editorial Note - One such change may be access to floodplain spawning and rearing habitats). Kucera accuses the Corps of trying to appease the politicians in Montana and North and South Dakota, where the largest dams are situated.

Reducing releases from the dams would raise the water levels in those states' reservoir lakes. Droughts in the late 1980s reduced the lakes' water levels. The 1990s have brought more rain, but those states complain that their lakes haven't been allowed to keep a fair share of the water because of downstream navigation needs.

Gov. Ed Schafer of North Dakota contends that the Corps, in the upstream states' view, has always been partial to the downstream states. "In our opinion, the barge traffic has been given much more attention than the recreation and the wildlife issues," Schafer said.

The Corps' Larry Cieslick, who is heading the review of the Missouri River management plan, says the Corps is being objective. The fact is, he said, that commercial navigation accounts for only $16 million of the $1.28 billion that the Corps says is generated annually by the use of the Missouri River. Ranking first is hydropower, followed by water supplies, recreation, flood control and then navigation.

Danforth's aides say such a comparison bolsters the senator's contention that the Corps has departed from its traditional emphasis on flood control and commercial navigation.

In February, Danforth and Rep. Alan Wheat, D-Kansas City, co-wrote a letter to President Bill Clinton asking him to block any Corps plan that would hurt river navigation. The letter was signed by more than 70 other members of Congress, both Republicans and Democrats.

That appeal has delayed the Corps' timetable for reaching a decision. A final draft was to be completed this spring, but has been pushed back to early next year.

To stem some of the downstream states' concerns, the Corps distributed to state and federal officials a preliminary draft containing seven alternatives. Of the seven proposals, one calls for the status quo. Of the remaining six, Missouri officials claim four would reduce flows on the lower Missouri River and endanger navigation.

The amount of water in the six lake reservoirs has increased by almost 25 percent just since January, said Duane Sveum, who oversees the controversial issue." Chris Sifford, a spokesman for Missouri Governor Carnahan said, "Right now, we're focusing on the flood. We'll focus on this later."

Gov. Schafer of North Dakota agrees with the down stream states on one point. "In all honesty, I don't think the pallid sturgeon is the issue. It's that recreation has to be considered on the same level as barge traffic."

National Rivers Coalition Awards Eleven Conservation Seed Grants

The National Rivers Coalition, chaired by American Rivers, has announced seed grants to 11 grassroots conservation organizations across the U.S. The grants will assist river protection efforts in Alabama, Colorado, Connecticut, Florida, New Hampshire, New Jersey, New Mexico and Wyoming.

The grants, totalling $11,000, were distributed by the coalition and funded by Recreational Equipment, Inc. (REI), a nationwide retailer of outdoor gear and clothing.

"Some of these local groups exist on a shoestring budget. These grants can make a big difference," said Suzi Wilkins, director of outreach and education for American Rivers. "We're grateful that, for six years in a row, REI has supported the coalition."

At its summer meeting, the coalition awarded seed grants to the following groups: the Cahaba River Society in Alabama, the Western Colorado Congress in Colorado, the Rivers Alliance of Connecticut, Save Our Creeks in Florida, the New Hampshire Rivers Campaign, the Merrimack Valley Paddlers in New Hampshire, the New Jersey Chapter of the Sierra Club, Amigos Bravos in New Mexico, the Clean Water Network in Washington, D.C., the Powder River Basin Council in Wyoming, and the Wyoming Outdoor Council.

The two grants received by the Wyoming Outdoor Council could make a big difference in that state, for example. The Council received a $750 grant to fight a proposed dam that would destroy critical wildlife habitat in Medicine Bow National Forest, and to protect rivers in Shoshone National Forest from impacts of oil and gas development. Segments of several rivers, including the Yellowstone, are threatened. A second $750 grant will be used to protect Clark's Fork of the Yellowstone from a proposed gold mine in the river's headwaters. The mine could potentially release acid and heavy metals into the river.

"Clark's Fork is Wyoming's only Wild and Scenic River, but already on the horizon is an inconceivable threat to this pristine area," said Stephanie Kessler of the Wyoming Outdoor Council. "This money won't change the world, but it will help make Wyoming people more aware of this threat."

The National Rivers Coalition includes American Rivers, National Audubon Society, American Canoe Association, River Federation, River Network, Sierra Club, American Whitewater Affiliation, and The Wilderness Society.

Flood/Non-Flood Images Available From EOSAT

EOSAT, distributor of data from U.S. Landsat satellites, will provide a free demonstration set of images of the St. Louis, Mo., area to the news media, government agencies, and any interested party. The imagery, nearly cloud free, clearly illustrates how devastating this flood has been. The set includes two images--a July 4, 1988 image acquired during a relatively dry period, and a July 18, 1993 image, where the water has risen 46.5 feet.

Color transparencies and color photographs of the images were available for distribution on Tuesday, July 20. EOSAT representatives also will be available to interpret the images and discuss the use of remote sensing data during and after the flood crisis.

Contact: Carla Adam, Earth Observation Satellite Company, 4300 Forbes Boulevard, Lanham, Maryland 20706-9954, (301) 552-0549.

Meetings of Interest

Conference on Western Wetlands and Riparian Areas - Public/Private Efforts in Recovery, Management, and Education

Topics include: research, delineation, and inventory efforts; outreach/education; management strategies; restoration, creation, and enhancement techniques; financial incentives; regulations and policies; and partnerships for protection.

The conference is sponsored by the Thorne Institute, USEPA Region 8, Colorado Department of Natural Resources, Montana Department of Natural Resources, North Dakota Water Users Association, Utah Department of Wildlife Resources, and Wyoming Game and Fish Department.

It will be held in Salt Lake City, UT. on September 9-11, 1993. Contact Susan Foster, Thorne Institute, 5398

Manhattan Circle, Suite 120, Boulder, CO 80303 (303) 499-3647.

A New Era for Western Public Lands

Conference will explore the changing context of public lands policy, conflicts between public values and private rights, and emerging ideas about integrated management of resources within ecosystems and watersheds.

The conference will be held on September 19-24 in Boulder, CO. Cost is $250, with discounts available for government, academics, and nonprofit groups. It is sponsored by the University of Colorado Natural Resources Law Center and the Law Review.

Contact: Katherine Taylor, Campus Box 401, Boulder, CO 80309-0401 (303) 492-1288.

Symposium on Agricultural Nonpoint Sources of Contaminants: Focus on Herbicides

This symposium is sponsored by USEPA and USGS and will be held at Lawrence, Kansas. Contact Larry Fergusun, USEPA, 726 Minnesota Avenue, Kansas City, KS 66101 (913) 551-7447.

47th Annual Conference of the Southeastern Association of Fish and Wildlife Agencies

The 47th Annual Conference of the Southeastern Association of Fish and Wildlife Agencies will be held at the Hyatt Regency in Atlanta, Georgia, October 10-13, 1993. "The Ecology of Growth and Development" is the conference theme.

Concurrent sessions will be held for Wildlife, Fisheries, Nongame, Law Enforcement, Information & Education, Legal, and License/Fiscal Administrators, as well as several other important Saturday and Sunday "pre-conference" sessions involving a variety of groups such as Wildlife and Fisheries Extension Specialists and the National Association of University Fish and Wildlife Professionals, and with such important subjects as Minorities in Natural Resources and the Restoration of Bottomland Hardwoods.

This is a must conference if you are an environmental professional in the Southeast (Texas to Florida to Maryland to Missouri, including Puerto Rico and the Virgin Islands). Meeting registration information is currently available from Bill Fletcher, Georgia. Wildlife Resources Division, 2150 Dawsonville Highway, Gainesville, GA 30501. You can also FAX him a request at FAX (706) 535-5953.

The Future of America's Rivers

American Rivers will host "The Future of Americas's Rivers" - a major rivers conference, November 4-7, in Washington, D.C.

The conference will shape future river protection policy and will celebrate the 25th Anniversary of the enactment of the National Wild and Scenic Rivers System. Several federal agencies and other conservation organizations will cosponsor the event. For conference information, contact American Rivers, Inc.; 801 Pennsylvania Ave. SE; Washington, D.C. 20003; (202) 547-6900.

55th Midwest Fish and Wildlife Conference

This year's conference will be held at the Regal Riverfront Hotel, St. Louis, MO. The theme of the conference is "New agendas in Fish and Wildlife Management: Approaching the Next Millennium". Undoubtedly, many formal and informal discussions will also occur regarding the floods of 1993.

For additional information contact: Norm Stucky, Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65102, (314) 751-4115.

Congressional Action Pertinent to Mississippi Basin Rivers

Administration

S. 171 On May 4, the Senate voted 79-15 to approve. This bill elevates the Environmental Protection Agency to a Cabinet-level department.

H.R. 1893 (Hansen, R-UT) would require Senate confirmation and set five-year terms and professional standards in selection of heads of Bureau of Land Management, National Park Service, Forest Service and the Fish and Wildlife Service.

Agriculture

H.R. 2264, the tax bill, caps enrollment in the Conservation Reserve Program at 36.5 million acres through 1995, while reducing the ultimate size to 38 million acres.

Biodiversity

H.R. 1845, (Studds, D-MA) creates the National Biological Survey in the Interior Department to assess, inventory and protect nation's biological resources.

S. 1008 (Baucus, D-MT) authorizes creation of the National Biological Survey in the Interior Department.

Coasts

H.R. 1899 (Laughlin, D-TX) establishes a Gulf of Mexico program at EPA aimed at controlling gulf pollution.

Endangered Species

House Merchant Marine panel held hearing May 27 to brief members on how the Endangered Species Act works.

H.R. 1992 (Smith, R-OR) amends Endangered Species Act by establishing "public interest" test before listings, and peer review for listings and critical habitat designation; the bill also bars scientists involved in listing from receiving university grants to study species and requires compensation for any loss of property value due to the act.

S. 921 (Baucus, D-MT) and **H.R. 2043** (Studds, D-MA) reauthorize and double spending for the Endangered Species Act, while emphasizing species protection on public land, multi-species listings and recovery plans, and greater emphasis on conserving candidate species; private land owners would be eligible for assistance to conserve species.

H.R. 2207 (Brewster, D-OK) amends Endangered Species Act by requiring study of impact of listings on hunting, fishing and wildlife management as well as by seeking ways to raise money from non-hunters to protect endangered species.

Fish & Wildlife

H.R. 2264, passed by the House, allows federal government to phase in $15 million-per-year charge to most federal water project water users to be used to offset project damage to fish and wildlife habitat.

H.R. 2360 (Lehman, D-CA) elevates Fish and Wildlife Service's office of law enforcement to directorate level.

H.R. 2500 (Gunderson, R-WI) provides for National Council on interjurisdictional rivers fisheries resources, and funding for MICRA. Hearing held on August 3rd by the Subcommittee on Fisheries Management of the Merchant Marine and Fisheries Committee.

Forests

H.R. 873, passed by the House, authorizes up to 80,000-acre addition to Gallatin National Forest in Montana.

Land Conservation

H.R. 2031 (Payne, D-VA) excludes from estate tax the value of land subject to a permanent conservation easement on land within 50 miles of a metropolitan area or national park.

S. 721 Senate Energy Committee held hearing May 18. The bill targets $5 billion in Land and Water Conservation Fund spending over five years for federal and state land acquisitions and recreation projects.

S. 1013 (Chafee, R-RI) excludes from estate tax the value of land subject to a permanent conservation easement on land within 50 miles of a metropolitan area or national park.

Parks

H.R. 1716 (Skaggs, D-CO) bars dams and reservoirs on North Saint Vrain Creek and authorizes Park Service to acquire land for Rocky Mountain National Park in Colorado.

Public Lands

H.R. 643, H.R. 1602 to raise grazing fees on public lands.

H.R. 1750 (Vucanovich, R-NV) makes permanent the current formula for determining public land grazing fees.

H.R. 1805 (Kildee, D-MI) hikes penalties and fines for dumping solid waste or illegally cutting, developing or transporting timber on public land.

S. 896 (Metzenbaum, D-OH) raises public land grazing fees to private land rates, gives breaks on fees for good stewardship while requiring study of public land to assess its suitability for grazing.

H.R. 2080 (Vento, D-MN) seeks to standardize procedures for withdrawing public land for military use with greater emphasis on environmental values.

H.R. 2328 (Vento, D-MN) creates Public Lands Corps for 16- to 25-year-olds to plant trees, fight fires, restore trails, control erosion and preserve historic sites on federal and Indian lands.

Recreation

H.R. 2264 The House-passed reconciliation bill, gives Agriculture, Army and Interior secretaries authority to set and charge various admission, camping, commercial tour use and rights-of-way fees at federal recreation areas.

Water and Wetlands

H.R. 1701 On April 21 a House Energy panel approved. The bill authorizes state revolving loan fund for drinking water treatment projects.

S. 171 On May 4, Senate adopted amendment to the EPA- to-Cabinet bill, that requires administration to send report to Congress within 90 days on differences between Clean Water Act section 404 wetland permitting requirements and farm bill's swampbuster requirements while considering whether to make Soil Conservation Service the sole agency making wetland determinations on farmland.

S. 815 (Lieberman, D-CT) and **H.R. 1720** (Lowey, D-NY) authorizes $28 billion in spending over seven years for grants for water pollution and estuary cleanup.

H.R. 1801 (Visclosky, D-IN) creates trust fund using Clean Water Act fines and penalties to be used for water pollution cleanup.

H.R. 1865 (Mineta, D-CA) authorizes $2.6 billion in spending over three years for new state revolving loan fund for water supply systems.

H.R. 1907 (Peterson, D-FL) provides EPA with flexibility in assessing civil penalties on small towns so that money will be spent on water pollution cleanup rather than litigation.

H.R. 1980 (Long, D-IN.) sets aside portion of Clean Water Act water pollution state revolving loan fund money for small towns.

S. 824 (Bond, R-MO) makes Soil Conservation Service the only federal agency to make wetland determinations on farmland.

H.R. 2264, the reconciliation bill that passed the House on May 27, includes provision to push back by five years the original 1995 goal of enrolling 1 million acres in the wetlands reserve program.

H.R. 2199 (Studds, D-MA) taxes industrial toxic water discharges, industrial and commercial water users, and fertilizer, pesticides and animal feed to raise $4 billion annually for reconstituted state revolving loan fund for cleaning up water pollution.

H.R. 2309 (Frank, D-MA) authorizes spending $2 billion a year through 2007 for grants and loans and stretches out loan repayments to 30 years for combined sewer overflows and other wastewater treatment construction.

Water Projects

H.R. 1858 (Inglis, R-SC) and **H.R. 2039** (Santorum, R-PA.) bar new Bureau of Reclamation water projects.

Wilderness

H.R. 198 and H.R. 631 House Natural Resources panel held hearing on these two Colorado wilderness bills.

Wildlife Refuges

S. 823 Senate Environment panel held hearing June 9 on this bill which is a comprehensive organic act for the management of National Wildlife Refuge System.

U.S. Department of the Interior
Fish and Wildlife Service
Large River Fishery Coordination Office
608 East Cherry
Columbia, Missouri 65201

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River Crossings

River Crossings

Volume 2 September/October 1993 Number 5

H.R. 2500, Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1993 Update

Thomas Manton, Chairman of the Subcommittee on Fisheries Management of the Merchant Marine and Fisheries Committee followed up on the hearing held on August 3rd on H.R. 2500, the Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1993, by sending written questions to the various persons who testified on behalf of the Bill.

This was encouraging, but to our knowledge no further action has occurred. Those interested in H.R. 2500 should once again contact their respective Congressmen urging early action on this Bill.

MICRA Paddlefish/Sturgeon Strategic Plan

The MICRA Paddlefish/Sturgeon Committee's Strategic Plan was reviewed at the Steering Committee meeting held in late June in Kansas City. Since all members were unable to attend that meeting, Chairman Fry sent the document out to all Steering Committee members for final review and approval.

To date, Fry has received letters of support from about half of the 33 member states and entities.

As soon as all members sign on in support of the document, the Coordinator will proceed with further networking with other groups under the National Paddlefish/Sturgeon Framework Plan developed over the past year by the U.S. Fish and Wildlife Service.

Pallid Sturgeon? Still Being Held in Missouri

About 9000 pallid sturgeon hatched in 1992 at the Blind Pony State Fish Hatchery in Sweet Springs, MO are still being held, pending the results of genetics evaluation to determine if they are pure pallid sturgeon or a hybrid between pallid sturgeon and shovelnose sturgeon.

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The fish are now 15-20 inches in length and food costs have become a major problem. The Missouri hatchery experiment was conducted as part of the Pallid Sturgeon Recovery Team's efforts to develop culture techniques for the endangered species. The Recovery Team has not recommended stocking the offspring of the experiment for fear of genetic swamping if they are a hybrid rather than pure pallid sturgeon stock.

Feed expenses may soon force Missouri to take action to either stock or destroy the fish.

Proposed Rule for Alabama Sturgeon

The Tuesday, June 15 issue of the Federal Register, Vol. 58, No. 113 included the "Proposed status and designation of critical habitat for the Alabama sturgeon".

> "The Fish and Wildlife Service proposes to list the Alabama sturgeon as an endangered species and to delineate areas of critical habitat. This small sturgeon is endemic to the Mobile River system, Alabama and Mississippi. Its current range is restricted to the lower Alabama River and the Cahaba River in Alabama. Both of these areas and the free flowing portion of the lower Tombigbee River are proposed as critical habitat. Factors in the sturgeon's decline include dams, and possible adverse effects from altered water flows, channel maintenance and gravel dredging. The Service needs data and comments from the public on this proposal.
>
> Comments from all interested parties must be received by October 13, 1993. A public hearing will be held to answer questions and gather additional information on the biology of the Alabama sturgeon and the proposed listing and critical habitat designation. The date, time, and location of the public hearing will be announced as soon as possible under a separate Federal Register notice and in newspapers of general circulation within the counties that may be affected."

The Alabama sturgeon was included as a target species of the MICRA Paddlefish/Sturgeon Committee's Strategic Plan.

Contact: James H. Stewart, U.S. Fish and Wildlife Service, 6578 Dogwood View Parkway, Suite A, Jackson, MS 39213, (601) 965-4900.

The Floods of 1993

From mid-June through early August 1993, flooding was severe in the upper Mississippi River Basin following a wet-weather pattern that persisted over the area for a least 6 months before the flood. The magnitude and timing of several intense rainstorms in late June and July, combined with wet antecedent climatic conditions, were the principal causes of the flooding.

Flood-peak discharges that exceeded the 10-year recurrence interval were recorded at 154 streamflow-gaging stations in the upper Mississippi River Basin. At 42 gaging stations, the peak discharge was greater than the

River Crossings

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River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

previous maximum known discharge. At 14 additional gaging stations, peak discharges exceeded the previous maximum regulated peak discharge. At 46 gaging stations, peak discharges exceeded 100-year recurrence intervals.

At two sites on the Mississippi River, the 1993 peak discharges reached record or near-record levels. The 1993 peak discharge for the Mississippi River at Keokuk was substantially greater than previous record peak discharges in 1973 and 1851. Although the 1993 peak discharge for the Mississippi River at St. Louis was not a record discharge (by volume), it was substantially larger than that for the large flood of 1973. The 1993 peak discharge for the Mississippi River at St. Louis was also slightly greater than that in 1903 and only slightly less than the estimated record peak discharge in 1844 (Table 1).

Figure 1. Top ten floods of record by volume, and by stage on the Mississippi River at St. Louis, MO.

By Volume of Water

Rank	Date	Cubic Feet Per Second	River Stage (in feet)	Type of Flood	River-stage Rank
1	June 27, 1844	1,300,000	41.32	500-year	3
2	August 1, 1993	1,030,000	49.47	?	1
3	June 10, 1903	1,019,000	38.00	100-year	10
4	May 19, 1892	926,500	36.00	50-year	#
5	April 26, 1927	889,300	36.10	40-year	#
6	May 3, 1883	862,800	34.80	30-year	#
7	July 15, 1909	860,600	35.25	30-year	#
8	April 28, 1973	852,000	43.30	30-year	2
9	June 20, 1908	850,000	34.95	25-year	#
10	April 30, 1944	844,000	39.14	25-year	7

By River Stage Readings

Rank	Date	River Stage (in feet)	Cubic Feet Per Second	Type of Flood	Volume Rank
1	August 1, 1993	49.47	1,030,000	?	2
2	April 28, 1973	43.23	852,000	30-year	8
3	June 27, 1844	41.32	1,300,000	500-year	1
4	July 21, 1951	40.28	782,000	20-year	#
5	July 1, 1947	40.26	783,000	20-year	#
6	May 4, 1983	39.27	708,000	10-year	#
7	April 30, 1944	39.14	844,000	25-year	10
8	October 9, 1986	39.13	728,000	15-year	#
9	May 24, 1943	38.94	840,000	25-year	11
10	June 10, 1903	38.00	1,019,000	100-year	3

# Not listed in top 10 of this category

Source: U.S. Army. Corps of Engineers/St. Louis Post-Dispatch/USGS

However, the 1993 flood was the flood of record by stage; more than 6 feet higher than the 1973 flood and more than 8 feet higher than the 1844 flood. It is generally agreed that increased flood heights in modern times are caused by floodplain development and constriction of the river by extensive levee development.

Effects of the Floods of 1993 on Fish and Wildlife

Much has been written in the press and in the various newsletters and communications about the dramatic impacts of the flood of 1993 on wildlife species. These include rather dramatic pictures of young deer separated from their mothers to various small mammals stranded in trees. Impacts discussed range from displacement to drowning and destruction of bottomland forest habitats.

Unfortunately, very little has been said about the flood's positive effects. All river biologists and the general public should understand that periodic flooding is a natural event for rivers, and as important to maintenance of a river ecosystem as the sun is to photosynthesis.

Perhaps one of the most important features of a flood is that it provides a "*reset mechanism*" that renews and often creates side channels and

backwaters, and stops plant succession which if left unchecked would destroy the diversity of riparian habitats necessary to maintain cover and nesting habitat for many native fish and wildlife species.

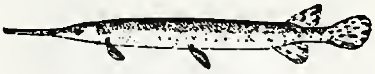
The floods of 1993 along the Missouri River provided an excellent example of the reset process. Despite man's extensive efforts to create and maintain stable farm fields, the river has reset them, reclaiming many as fish and wildlife habitats by creating huge scour holes and new side channel habitats, and covering ag fields with extensive sand deposits.

As for the fish themselves, they quickly moved onto the floodplains with the rising flood waters. According to Scott Gritters, Iowa Department of Natural Resources, fish density was quite low in the Upper Mississippi River channel this summer, while it was quite high in flooded terrestrial areas. "It's surprising, he said, we're finding large numbers of fish in a variety of areas...parks, cornfields, and railroad ditches."

This is not unusual. In their natural environment (unimpacted by man's activity) fish moved onto the floodplain annually to spawn, nurse their young, and feed. The hydrological concept involved is described by scientists as the natural hydrograph, which on most rivers includes both a spring and fall rise. Virtually all of our rivers and their native species evolved under conditions of a natural hydrograph. On most of our rivers the natural hydrograph has been greatly disrupted, if not destroyed, and this is one of the primary reasons why many of our native species are in trouble and find themselves listed on threatened and endangered species lists.

The concept was perhaps most simply put by an "old timer" in Columbia, MO who was old enough to remember the flooding that occurred along the Missouri River before all the levees were put in. He said, "The river used to 'get up' twice annually. In the spring it would rise and 'put water and fish in the backwaters', and then in the fall the river would rise and 'come back to get them'".

When the river came back in the fall, all the young that were raised in these backwaters recharged the river system with a new year class of fish. If the river failed to rise, and the backwaters dried up or froze solid, the stranded fish were simply consumed by scavenger species of wildlife who also evolved under, and relied on, these conditions.



So the bottom line is, that for once in many years, river fish were given a reprieve by the flood and were given access to their natural floodplain habitat. We think it was about time, and hope the flood will cause some lasting positive benefits by allowing reverted habitats to be maintained as part of the natural functioning river system instead of being leveed off once again as part of man's futile attempt to fight rather than live with mother nature.

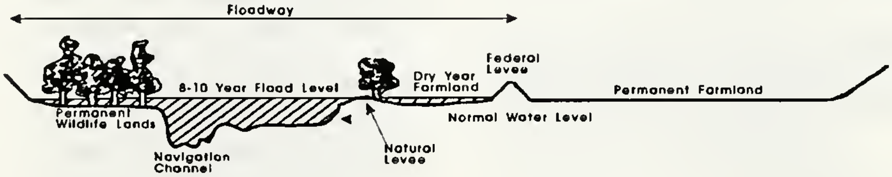
Response to the Floods of 1993

Since mid-July State and Federal construction agencies, led by the Federal Emergency Management Agency (FEMA), Corps of Engineers (COE), and Soil Conservation Service (SCS), have been in a frenzy, rushing to provide what assistance they can, within existing authorities, to flood victims in nine midwestern states. The floods of 1993 have been and continue to be a major national disaster. Many large rivers in the midwest remained in flood stage all summer. In fact, in late September, 6-11 inch rains fell again in Missouri, Iowa, and Kansas, causing the Missouri River to leave its banks, and flood bluff to bluff for at least the third time this year.

Initial federal response to the flood seemed to be a desire to rebuild all of the broken levees to pre-flood condition as soon as possible. In essence, this would reset the clock and the stage for the next great flood. History has shown that our society's traditional response to flooding has been to "rebuild broken levees higher and stronger"; and this has done little more than to increase stages and future floods making resultant damages even greater and more devastating.

This flood, however, may have caused so much damage and broken so many levees that the government simply won't have enough money to rebuild all the levee systems. Since 1952 so many levees have been built along both the lower Missouri and Mississippi rivers that the flood stage necessary to breach them was elevated so high that when they did break, awesome forces were released causing record damages to floodplain homes and farmland.

Huge scour holes, some as large as 100 acres or more in size and 20-40 feet deep, were created at levee breaks as the impounded water rushed through. The force of this rushing water carried away much of the topsoil and moved massive amounts of sand over the land, burying impacted farmland under as much as six feet of sand.



Environmental and conservation groups, as well as those simply wishing to reduce the federal deficit, have responded to the flood with their own frenzy of activity trying to bring common sense to the federal flood response. Coordination meetings have been and continue to be held throughout the basin and in Washington, including meetings with Vice President Gore and Interior Secretary Babbitt at the White House.

Those concerned with the environment and those simply concerned with the economy continue to pursue development of a coordinated, consistent, common sense response to the flood.

The article we presented in the last issue of River Crossings describing the Floodway Concept (shown above) as a reasonable and common sense approach to flood control has received significant attention from both environmental and economic interests across the country.

Various decision making options are currently being considered, including: (1) establishment of a Presidential Commission to review federal flood control policy, (2) establishment of a science advisory team to develop short term action strategies based on the best science available, and (3) development of a long term strategy or plan to review and improve the national role in flood plain management and disaster assistance.

The fundamental goal of the federal government is to develop a set of comprehensive policy and programmatic options that reduce risks associated with floodplain management and unify federal, state, and local floodplain management policies and practices with other national goals (e.g., endangered species recovery; no-net loss of wetlands; swimmable, fishable and drinkable water; etc.).

Specific items being reviewed include the following:

- state and local floodplain regulations, zoning and building codes, and development policies;
- the true long-term financial costs associated with current operations along the river (e.g., crop subsidies, insurance, repetitive flood fight and repair costs, transportation costs);
- nonstructural means to provide protection or compensation for properties protected by levees ineligible for federal assistance;
- the need for storm water retention ponds in urbanized and sub-urbanized areas to assist in addressing non-point source water quality issues and synchronization of flood peaks;
- floodproofing and relocation programs;
- flood flow control;
- drought flow response;
- endangered and threatened species;
- recovery flows;
- navigation flows;
- alternative levee design and construction methods;
- environmental opportunities and sensitive environments;

- reducing the rate of inflow from the watershed (e.g,, restoration of wetlands, improved soil and water retention practices);
- aquatic and floodplain habitat values;
- guidelines or requirements that runoff and flood storage capacity be built into projects qualifying for public assistance and/or federal or state permits or licenses;
- the need for additional federal and state legislation to coordinate authority for floodplain activities (e.g,, a floodplain management act similar to the Coastal Zone Management Act) or multiple use/sustained yield management for interstate river systems (e.g., a program similar to the federal timber land policy);
- identification of federal, State, tribal, and local programs and practices that work at cross-purposes to, or could better facilitate or recognize flood loss reduction and floodplain management goals,
- sewage treatment plant siting, construction and enhancement priorities and opportunities;
- solid and hazardous waste monitoring, management or removal
- actions/policy changes that reduce overall taxpayer support of activities conducted in floodplains;
- agency recovery responsibilities,
- flood loss damage and floodplain management incentive programs;
- funding necessary to effectively implement options to levee repair;
- local government commitments on floodplain management;
- federal assistance eligibility policy that is consistent across agencies and states (e.g., levee eligibility, cost-sharing, and replacement cost vs. market valuation)
- public involvement

All of these items need to be addressed both for the short and long term. The debate over the appropriate Federal role in flood protection will likely continue for many months, or perhaps years to come. Most seem to feel that we simply can't continue to repeat the mistakes of the past and set ourselves up for larger losses when the next flood occurs.

Reevaluating Government Flood Assistance Policies for Agricultural and Open Spaces Lands

Duane Sands, speaking for the Iowa Natural Heritage Foundation, at a workshop held on September 27-29 in St. Louis, MO jointly by the Association and State Wetland Managers and the Association of

State Floodplain Managers, proposed redirecting flood assistance programs (other than aid to households and individuals) to help accomplish economically and environmentally sustainable land use.

Sustainable land use for *frequently flooded areas* includes , grasslands, wetlands and undeveloped recreation lands. According to the Foundation assistance programs for these areas could include:

- fee title purchase for public use by federal, state or local government;
- purchase of conservation easements to assure sustainable use and prevent other uses or investments;
- cost-sharing grants or loans to convert to a sustainable use, with a long-term maintenance agreement recorded and attached to the land title (tree planting, seeding, fencing, water improvement);
- technical assistance, education, and demonstration funds to improve the economic returns and environmental benefits of sustainable uses (forest management, wildlife management, grazing systems, alternatives to enable livestock grazing).

Sustainable land use for *occasionally flooded areas* includes , pastures, rotation cropland with emphasis on hay production, and wildlife habitat. The Foundation proposes the same assistance programs for these areas as for frequently flooded areas.

Sustainable land use for *infrequently flooded areas* may include uses listed above; plus row crop agriculture, and buildings and improvements designed or planned with realistic expectations of flood frequency and costs. Lands behind substantial levee systems are considered to be in this group, as not fully protected.

The Foundation proposes that assistance programs for these lands could include:

- levee improvements where taxes generated because of the improvements repay the government subsidies for the land use;
- technical assistance, education, and demonstration funds to improve risk management and environmental protection (sustainable agriculture systems, best management practices, farmstead planning, evacuation planning).

In summary, the Heritage Foundation believes the role of government is to encourage private enterprise to keep investments out of harm's way, and public policy should assist only those land uses that are economically and environmentally sustainable.

In essence, they are promoting the floodway concept discussed in the last issue of "*River Crossings*", and shown at the bottom of 4 of this issue.

Contact: Duane Sand, Iowa Natural Heritage Foundation, 444 Insurance Exchange Building, 505 Fifth Ave., Des Moines, IA 50309-2321, (515) 288-1846, FAX (515) 288-0137.

Influence of Wetlands on Streamflow in Illinois

A draft report of the Illinois State Water Survey summarized systematic studies conducted to quantify the influence of wetlands on flooding and low flows.

Streamflow records from 30 gaging stations monitoring watersheds with variable wetland areas were analyzed. The main objective of the analysis was to determine if streamflow parameters of streams draining watersheds with varying percentages of wetland areas were related to the percentage of wetlands in the watersheds.

Streamflow parameters analyzed included peakflow, floodflow volume, and low flow. From the results of this analysis, in general, it can be concluded that peakflow and floodflow volume decrease, and low flows increase with increasing percentage of wetlands in the watershed. The influence of wetlands was more noticeable on peakflow and low flow than on floodflow volume.

For all the gaging stations analyzed, the peakflow to average precipitation ratio decreased on the average by 3.7 percent, floodflow volume to total precipitation ratio decreased by 1.4 percent, and low flow increased by 7.9 percent for an increase of one percent wetland area in a watershed. There were, however, significant regional and seasonal differences in the rate of change.

Regionally, wetland influence was more noticeable in central and northern Illinois than in southern Illinois for both peakflow and floodflow volume. The influence of wetlands on low flow was more noticeable in southern and northern Illinois than in central Illinois, however. The peakflow to average precipitation ratio decreased by 5.9 to 7.9 percent, while floodflow volume to total precipitation ratio decreased by 4.5 and 2.3 percent in central and northern Illinois, respectively. For low flow, Qgs increased by 15.9 and 15.0 percent in southern and northern Illinois, respectively.

Seasonally, for the state as a whole, wetland influence was the most prominent in fall for the peakflow to average precipitation ratio (5.7 percent decrease) and in summer for the floodflow volume to total precipitation ratio (3.1 percent decrease). For low flow, the influence of wetlands was equally noticeable in fall (8.4 percent increase in Qgs) and summer (8.0 percent increase in Qgs).

Source: Demissie, M., and A. Khan. 1993. Influence of wetlands on streamflow in Illinois (Draft). Illinois State Water Survey, Hydrology Division, 2204 Griffith Drive, Champaign, IL 61820-7495.

Clinton Administration Unveils Comprehensive Wetlands Proposal

The Clinton administration's wetlands policy received mixed, if not somewhat favorable reviews, after its August 24 unveiling. The wide-ranging policy, contains 40 provisions, and borrowed heavily from the Bush Administration's 1991 proposal, but avoided controversial changes to the wetlands delineation manual.

Under the new policy mechanized land clearing, ditching, and channelization of wetlands, activities thought to account for up to 80 percent of the nation's wetlands loss, will require a Clean Water Act Section 404 permit.

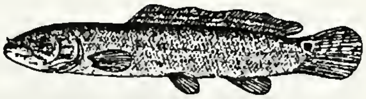
The new rule, published in the August 25 Federal Register, settled one lawsuit–North Carolina Wildlife Federation v. Tulloch but prompted another. The National Association of Home Builders, American Mining Congress, American Road and Transportation Builders Association and the National Aggregates Association filed suit August 25 in U.S District Court in the District of Columbia, claiming the Army Corps of Engineers did not have legal authority to regulate the new activities.

The new rule also made final a Bush Administration proposal to exempt from Clean Water Act wetland regulations for more than 53 million acres of wetlands that were converted to farmland prior to December 1985. The "prior converted croplands" have been exempt from the swampbuster provisions of the farm bill and now will be exempt from the Clean Water Act's Section 404 regulation as well.

Farmers also were happy to see a proposal to give the Soil Conservation Service the power to determine what is or isn't a wetland on agricultural land. Existing enforcement and permitting powers would remain with the Corps and the Environmental Protection Agency.

Conservationists, who long have been unhappy with the Soil Conservation Service's enforcement of the swampbuster program, are leery of giving that agency more authority to oversee wetlands. The administration also proposed that the Army Corps of Engineers develop a new Section 404 general permit for discharges that are exempt from swampbuster provisions, and that the wetlands reserve program be expanded when Congress takes up the 1995 farm bill.

Conservationists were enthused by Clinton's decision to reverse a Bush administration proposal to exempt 1.5 million acres of Alaska wetlands from a three-step mitigation process aimed at protecting wetlands. Bush proposed loosening the regulation because in areas of permafrost, it is difficult if not impossible to avoid damage to wetlands or find alternative wetlands to protect.



The administration also supported wetland categorization as part of a local or regional planning effort. EPA currently engages in such advance planning under which developers can find out in which areas Section 404 permits would or wouldn't be issued. The effect is that higher value wetlands are saved at the expense of lower value ones. The administration wants to encourage such an approach that would provide landowners with early identification and characterization of their wetlands. Landowners then could be rewarded with a streamlined Section 404 permit review and more flexible mitigation requirements to offset any wetlands damages.

The strongest denunciation of the Clinton proposal came from the National Wildlife Federation. "We believe the package is a net loss for America's wetlands," said Jan Goldman-Carter, a federation attorney. Citing the exemption of prior converted cropland, Goldman-Carter said the proposal was "steeped in rhetoric and laden with wetlands giveaways."

Steve Moyer of Trout Unlimited said he was pleased with the process but disappointed with the substance of the proposal. "It's not as aggressive as it needs to be" to meet the high standards and goals set by the Clean Water Act, he said. The proposal is laced with references to "appropriate environmental safeguards" that are not spelled out, Moyer said. For example, the administration gives a broad-scale endorsement of mitigation banking, a technology in its infancy that needs strong safeguards to avoid accelerating wetland destruction, he said. Likewise the proposal's emphasis on giving states greater control over the Section 404 program could lead to greater abuse unless it is tried on a tightly controlled basis.

Moyer also questioned the administration's administrative appeals proposal, which he said was weighted in favor of developers. They can appeal a denial by the Corps of a Section 404 permit but conservationists will not have the right to appeal issuance of a permit. The Clean Water Act is an "environmental law, after all," Moyer said.

Source: Land Letter, September 1, 1993, Vol. 12, No. 23

Administration Grazing Reform Could Double Fees

The Clinton administration announced its intent to bring federal grazing fees closer to market value and proposed a series of new regulations designed to improve the health of rangeland ecosystems. The new proposal, announced by Interior Secretary Bruce Babbitt in a press conference August 9, has drawn praise from

environmentalists and scorn from many Western lawmakers and ranchers.

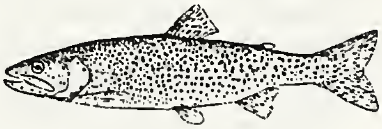
The National Wildlife Federation's Cathy Carlson called the combination of fee increases and regulatory changes "significant reforms that will bring grazing management into the 20th century."

Under the new plan, the Bureau of Land Management and Forest Service –the two agencies responsible for overseeing the nation's 260 million acres of federal grazing lands–would replace their existing grazing fee formula with an "appropriate range" of fees, tied to an index of private land rental costs. Under the current formula, federal grazing fees decreased from $2.36 per animal unit month (AUM) in 1980 to a low of $1.35 per AUM from 1985 to 1987. The 1993 fee is $1.86 per AUM. An AUM is the amount of forage necessary to sustain a cow and her calf, or five sheep, for one month.

The new fees would range from $3.51 to $5.05 per AUM, averaging $4.28 per AUM, a 130 percent increase that would be phased in over three years to lessen the impact on ranchers, the administration said. In the first year, ranchers could expect to pay $2.76 per AUM, followed by a second-year fee of $3.53 per AUM. The administration's proposal, however, would still leave federal fees far below that of private lands, which averaged $10.03 in 1993. "Our belief is that the ranching community is getting a good deal, and they know it," Babbitt said.

Prior to issuing the plan, the Interior and Agriculture departments held five well-attended public meetings in the West on the topic of rangeland management. Those meetings, Babbitt said, had a significant impact on the plan's development.

The grazing fee formula currently in use expired in 1985 under the Public Range Improvement Act (PRIA). President Reagan, in lieu of congressional action, issued an executive order extending the PRIA grazing formula. Although Congress attempted to address the grazing issue on numerous occasions, a successful resolution has yet to be found.



In addition to the fee increase, the Clinton administration proposal would establish national rangeland standards and guidelines to ensure that land management is conducted in a manner consistent with ecosystem health. Special emphasis would be placed on management of riparian areas. Grazing seasons could be shortened, and pesticide use curtailed as a means of meeting management objectives.

Under the new plan, the length of future grazing permits will be determined in part by the of stewardship provided by the permit holder. Permits would be issued for up to 10 years, provided that the permit holder complied with permit terms and objectives, met grazing allotment objectives and helped achieve desired condition of the land resources.

A potentially controversial measure would authorize BLM to file and hold sole title to water rights associated with future public land range improvements. Since 1984, permittees have been allowed to control the title to water rights.

Resource advisory boards would replace the BLM's existing grazing advisory boards, which have been criticized because they are dominated by ranching interests. The new panels would include a broader spectrum of interests, including wildlife managers, fisheries experts, environmentalists, and local business owners, as well as ranchers.

However, in a 59-40 vote on September 14, during consideration of the fiscal 1994 Interior spending bill, the Senate voted to bar for one year the implementation of the Clinton administration's rangeland management reform package.

The administration still has a chance to head off the ban when House and Senate conferees sit down to reconcile differences between their respective spending bills in the coming weeks. But the House in recent years has deferred to the Senate on grazing matters during the House-Senate conference. Also, for the first time in years, the House didn't include a grazing fee hike in its spending bill this year because it was deleted on procedural grounds by Rep. Pat Williams (D-MT).

Senate opponents of the grazing proposal, led by Senators Pete Domenici (R-NM), Harry Reid (D-NV) and Malcolm Wallop (R-WY), argued that the administration was overstepping its authority by trying to reform the management of 260 million acres of Bureau of Land Management and Forest Service land through rule-making and executive orders and without Congress' help. The "government should not do this by fiat," Domenici told his colleagues.

Wallop, the ranking Republican on the Senate Energy and Natural Re sources Committee, which oversees grazing issues, said his intention is to help pass a grazing reform bill. Wallop cosponsored a rancher-backed bill that allows a 25 percent hike in grazing fees next year. "It is our purpose, in fact, to pass a law," he said. "I assert that." The ranchers' bill, S. 1326, would increase grazing fees as of March 1 to $2.33 per animal unit month compared to the administration proposal of $2.76.

An Interior Department official said the administration, which is looking

to the House for help in getting the Senate amendment deleted from the final bill, is not opposed to a legislative solution to the grazing issue if Congress can come up with one that meets Secretary Bruce Babbitt's rangeland management objectives. Congress has debated the grazing issue on and off for decades.

Meanwhile the Interior and Agriculture departments agreed to a request by Western governors to extend the initial public comment period on the administration's rangeland proposal for 30 days. The proposal appeared in the August 13 Federal Register, with comments now due about Oct. 19.

Source: Land Letter, September 1, 1993, Vol. 12, No. 23; and Land Letter, September 20, 1993, Vol. 12, No.25.

Natural Resource Provisions in Tax Bill

The massive half-trillion-dollar deficit reduction law that President Clinton signed August 10 included the following:

The law is expected to raise $345 million over the next five years by authorizing fees to be collected at some recreational sites run by the Army Corps of Engineers, Forest Service and the Bureau of Land Management. Golden Age passports, which let people 62 and older into all national parks for free, will cost $10 under the new law. The $25 annual Golden Eagle passes, which have been sold by the Park Service, can now be sold by non-federal organizations as well and can be used to gain entrance to other federal recreation areas.

The non-federal proceeds will go to the parks and recreation areas based on their entrance fee revenues. The money is to be spent on resource protection, rehabilitation and conservation projects carried out by the Conservation Corps. The law also allows commercial tour fees to be charged at certain national parks for planes, buses and other commercial operations.

The law scales back the Agriculture Department's conservation reserve program and stretches out enrollment in the wetlands reserve program. Enrollment in the conservation reserve is now capped at 38 million acres through the end of fiscal 1995, 1 million acres lower than before.

The wetlands reserve program also was trimmed significantly, with the old 1-million-acre target by the end of 1995 cut two-thirds to 330,000 acres. A new 975,000-acre goal was set by the end of 2000. Savings for these two programs is slated to be $469 million over five years.

Conferees also dropped a House provision that would have charged users of water from federal reclamation and Corps of Engineers projects an annual operation and maintenance fee. The money was to be used to restore fish and wildlife habitat that was adversely affected by the construction of water projects.

Source: Land Letter, September 1, 1993, Vol. 12, No. 23

ENTERING THE WATERSHED: An Action Plan to Protect and Restore River Ecosystems, A Report to Congress

The Pacific Rivers Council has produced a noteworthy document entitled "Entering The Watershed: An Action Plan to Protect and Restore America's River Ecosystems and Biodiversity, A Report to Congress".

One of the most interesting aspects of the report is that it calls our tendency to tackle the worst problem areas first backwards, from an ecosystem point of view. To the contrary, the report argues that we should preserve and save the high- quality, at-risk waters and other elements of the ecosystem first, so that riverine system restoration efforts will have something positive and stable to build upon. Watershed restoration then becomes an extension of that part of the ecosystem that is working. This recommendation is contrary to the Clean Water Act's historic approach of focusing on degraded water.

The report considers rivers as holistic ecological systems, with the mainstem, tributaries, riparian areas and floodplains as interdependent parts. The report's principal recommendation is the enactment of legislation establishing a national watershed restoration program.

The goal of the Clean Water Act itself would be expanded to "restore and maintain the chemical, physical and biological integrity of the nation's waters and the natural ecological integrity of riverine-riparian ecosystems and biodiversity."

The document details the degradation of America's riverine system and the steady narrowing of its range of biodiversity. It describes *ecosystem simplification* as a river system's reduced ability to repair itself and its weakened biological integrity. The causes of ecosystem simplification are described as:

- changes in hydrologic regime,
- hydromodification,
- nonpoint source pollution,
- loss of substrate quality and stability,
- point source contamination,
- overharvest or removal of native species, and
- introduction of exotic species.

The report says that these problems have resulted from decades of mismanagement and piece- meal attempts at restoration that largely failed because they neglected to understand and heal riverine system ecology. According to the Council, ". . . almost all watersheds nationwide are already highly degraded and

fragmented."

The Council points out that failure to stem the degradation of America's riverine systems is a failure at all levels of government:

> "The few riverine protection policies that exist... focus on discrete stream segments, not ecosystems, an approach that fails to address the actual processes and functions of riverine systems. The restoration policies that exist generally focus on single species (usually gamefish), the most degraded stream segments, or the chemical aspects of water quality....Existing protection and restoration strategies and policies at all levels of government are fragmented, extremely limited in scope, and generally ineffective. More effective tools and policies are needed in the national riverine protection and restoration tool box."

The report emphasizes the complexity of river systems and their inseparable relationship to their watersheds, principles that must be reflected in restoration policies.

> "Watersheds are ecosystems composed of a mosaic of different land or terrestrial 'patches' that are connected by (drained by) a network of streams. In turn, the flowing water environment is composed of a mosaic of habitats in which materials and energy are transferred, and therefore connected, through biologically diverse food webs. Human activities can therefore fragment and disconnect the habitat patches if management is not planned and implemented from an ecosystem and watershed perspective... In-stream conditions, then, are largely determined by the processes occurring within the watershed and cannot be isolated from or manipulated independent of this context...Management and conservation activities absent from the watershed context run the risk of being ineffective at best and can be counterproductive at worst."

In a degraded riverine system, according to the report, a few critical areas may remain healthy. These areas "play a vital role in supporting existing levels of health for the systems, and anchoring potential recovery efforts."

> "The small streams at the *headwaters* of riverine systems are the most vulnerable to human disturbance (especially timber harvesting, road building, grazing and related activities) because they respond dramatically and rapidly to disturbance to their riparian areas.

> '*Biotic refuges* . . . are discrete riverine areas which maintain habitat conditions conducive to at-risk biodiversity.
>
> 'The remaining undisturbed *Headwater Streams* also constitute many of the remaining benchmark streams with which to compare and monitor stream ecosystems over time.
>
> '*Riparian Areas And Floodplains* play a critical role in maintaining ecosystem health throughout the system, not just in headwater areas.
>
> '*Biological Hot Spots* . . . [are] smaller, intact riverine habitat patches that provide a critical function for the stream."

The protection of these areas is targeted as the crucial first step in restoration. In fact, restoration resources should aim at "securing" the remaining healthier areas before being applied elsewhere.

The new approach, "simple in concept and pragmatic in application," to protecting and restoring America's riverine systems is based on the principles of watershed dynamics, ecosystem function, and conservation biology.

The approach involves three interconnected components:

- *Identification And Protection* of the remaining relatively healthy headwaters, biotic refuges, riparian areas, floodplains, and...biological hot spots. This places the emphasis on preventing impacts rather than on attempting to control or repair them after they occur. Prevention is more cost-efficient than control measures, which have failed in most cases.

- *Restoration*...[focusing] on providing better management between the protected areas and eventually linking and expanding the healthy areas... [differing] considerably from the traditional restoration strategies that apply almost all resources to restoring the most degraded river reaches, single species, or to improving water quality with little awareness of the needs of the overall ecosystem

or of the opportunities for cost-effective rapid biotic recovery.

- *Participation of Local Communities and Citizens*...local jobs in restoration technologies, community revitalization projects and economic conversions such as changes in agricultural crops that are less water- and energy-intensive must be created. Open space preservation such as the protection of undeveloped floodplains must also be encouraged. Incentives and technical assistance must be provided to encourage local involvement in taking these steps and in designing and implementing watershed restoration action plans.

The report outlines a series of necessary federal actions to begin the ecological and riverine preservation and restoration for both federal lands and private lands. The long term policy solution envisioned by the Council is the enactment of a *National Riverine and Riparian Conservation Act.* According to the report, the Act would:

> "...combine regulatory and non-regulatory approaches to protect and restore every riverine system, regardless of land ownership."

In this effort , the new Act would not parallel the Clean Water Act, but extend it and establish an EPA program to "administer state programs, distribute grants and funding, and establish standards and criteria." Such a program would require substantial participation of other federal agencies, and major leadership roles lodged at the state and local levels.

Under the proposed legislation, watershed interests and affected groups and citizens would be brought together through watershed councils to plan and implement Watershed Restoration Action Plans (WRAPs). Such plans would initially focus on the protection and restoration of riparian areas, floodplains, and biological hot spots. Dams, dikes, levees, and channelizations would be retired or modified, and sedimentation and runoff reduction strategies would be implemented.

The plan would provide for coordination and integration of all state and federally funded activities in the watershed.

The report concludes by outlining ten key issues that must be addressed:

- We must fully acknowledge the severely degraded state of riverine systems and biodiversity nationwide, and make a national commitment to change this.
- Riverine systems must no longer be defined as "renewable" energy and water resources.
- Larger numbers of riverine systems must be addressed simultaneously and comprehensively.
- Current assumptions, strategies and policies must be redesigned from the stream-segment and single-species focus to the watershed (landscape), ecosystem and biodiversity perspective.
- Local investment in river conservation must be encouraged.
- Long-term funding must be provided.
- Accounting procedures must be expanded to fully account for external costs of proposed riverine developments.
- The terms "sustainability" and "restoration" must be clearly defined.
- A commitment to prevention rather than repair or control is required.
- Most importantly, we must rapidly implement the comprehensive protective measures described in this report, along with the separate but connected set of recovery actions.

The appendices to the book provide an assessment of the nation's existing riverine policies and programs in four parts: (1) Riverine Management of Federal Lands Under Existing Resource Protection Statutes; (2) Riverine System and Biodiversity Management by the Federal Land Management Agencies; (3) Federal Policies and Programs Affecting Rivers that Flow Through Private Lands; and (4) State and Local Riverine Management Policies. Each section is packed full of important information for understanding where we are now, policy- and management-wise.

The Pacific Rivers Council is a regional and national conservation organization focused on restoring America's riverine systems and biodiversity, with offices in Oregon and Washington, D.C. The report was prepared over a period of two-and-a-half years by Council staff and consulting scientists and public policy specialists, and included several field workshops and meetings with scientists and other groups nationwide.

For more information contact: Bob Doppelt, Executive Director, Pacific Rivers Council, P.O. Box 309, Eugene, OR 97440, (503) 345-0119, FAX (503) 345-0710.

Source: Nonpoint Source News-Notes, c/o Terene Institute, 1717 K Street, N.W., Suite 801, Washington, D.C. 20006, August/September 1993, No. 31.

Reauthorizing the Clean Water Act

On June 15 Senators Max Baucus (D-Montana) and John Chafee (R-Rhode Island) introduced S. 1114, the Water Pollution Prevention and Control Act of 1993., a bill to amend and reauthorize the Federal Water Pollution Control Act (Clean Water Act).

Key provisions of the Senate Bill include the following:

- Existing state nonpoint pollution

control plans are to be revised and upgraded to address new activities causing water pollution, to prescribe best management practices for new uses, and to implement site-specific management plans for existing agriculture sources in impaired watersheds. Funding for nonpoint programs is increased substantially, and 50 percent of these funds are made available as cost-share grants to implement site-specific water quality plans.

- A new initiative is introduced for voluntary watershed planning to correct pollution in impaired watersheds. States may identify impaired waters and watersheds and develop watershed plans to assure that water quality goals are met. Significant percentages of loan funds are reserved for projects in watershed areas, and watershed plans allow the adjustment of pollution requirements and nonpoint sources.

- Authorized level of appropriations to the state revolving loan funds is increased to $2.5 billion in 1994. Thereafter, the level will increase $500 million per year to 2000 when the authorization will be $5 billion.

- The list of projects eligible for state revolving funds is expanded to include combined sewer overflows, stormwater, nonpoint pollution, animal waste management, and subsurface sewage disposal.

- A new pollution prevention planning initiative is established. EPA is required to identify 20 chemicals warranting intensive pollution prevention efforts.

- EPA is also required to develop a list of highly bioaccumulative and toxic pollutants. Discharges of the pollutants on the list are to be phased out over a five-year period, unless safe substitutes or treatments are not available.

- The bill adopts the EPA draft policy for control of overflows from combined storm and sanitary sewers. Long-range deadlines up to 15 years are authorized for complying with water quality standards.

- Stormwater permits will be developed for large and mid-sized communities beginning 3 years after adoption of the bill to assure compliance with national guidance on management measures and water quality standards.

On June 28, Representative James Oberstar (D-Minnesota) introduced H.R. 2543, the Nonpoint Source Water Pollution Prevention Act of 1993. This bill does not address the comprehensive reauthorization of the Clean Water Act, but looks exclusively at improvement of the nonpoint source control provisions contained in Section 319.

The Oberstar bill focuses on watersheds. Watershed implementation programs (WIPs) will begin with a watershed conference called by the WIP's state governor. All stakeholders in the watershed will have an active part: nonpoint sources, point sources, and all water users, including drinking water suppliers, federal, state and local governments and nongovernmental agencies. From the management conference would come an understanding of the problem, agreement on the causes, and on who is responsible and who should clean up.

The bill encourages "good actors," those who comply to carry out site-level clean-up plans, and requires states to have fall-back enforcement legislation for "bad actors," those who "refuse clean up and who try to profit while the good actor competitors comply."

The bill authorizes $500 million per year and sets aside from each state's apportionment 20 percent or $200,000...(whichever is greater), for state administrative costs. The bill also establishes, directly under the President, a program for the control of nonpoint sources on federal lands.

Hearings on S. 1114 were held by the Senate Environment Panel on June 16, June 23, July 1 and July 14.

In the first of the two-month series of Senate hearings, EPA Administrator Carol Browner testified that the administration intends to "expand emphasis from chemical properties of water to ecosystem and biodiversity protection . . . provide incentives to states to voluntarily prepare watershed plans . . . and [emphasize] site-specific polluted runoff plans."

Browner stressed voluntary, targeted approaches in non-point source pollution management, backed up by the ability to address repeated noncompliance.

Source: Nonpoint Source News-Notes

August/September, 1993, No. 31, and Runoff Report, Summer/ Fall 1993

Landmark Pennsylvania Law Mandates Nutrient Management

Pennsylvania has passed a first-of-its-kind law to stem the flow of nutrients into state waters and the Chesapeake Bay. Signed by Governor Robert P. Casey on May 20, the Nutrient Management Act links livestock density to mandatory nutrient management.

The Act's primary purpose is to establish criteria, nutrient management planning requirements, and an implementation schedule for the application of nutrient management measures on certain agricultural operations which generate or utilize animal manure.

Under the Act, farms with more than 2,000 pounds of livestock or poultry per acre are required to develop and carry out approved nutrient management plans. About 8,000 to 10,000 existing beef, dairy, hog, poultry, and horse farms in Pennsylvania meet the animal density criteria.

Ninety percent of the fresh water streaming into the upper Chesapeake Bay comes from Pennsylvania's Susquehanna River, and agricultural runoff is the largest source of nutrients in the river. Under the Chesapeake Bay Agreement with Maryland and Virginia, Pennsylvania has pledged to reduce nitrogen flow into the bay by nearly 20 million pounds per year.

The Pennsylvania State Conservation Commission, in conjunction with the state environmental and agriculture departments, has two years to promulgate regulations to implement the law and set minimum standards for nutrient management plans.

The law establishes an advisory group of 15 members to review the commission's regulations. The advisory group will consist of: five farmers, one feed industry representative, one commercial agricultural lender, one fertilizer industry representative, one local government representative, one academic agronomist or plant scientist, one veterinary nutritionist, one representative of environmental groups, two citizens, and one hydrologist.

In addition to regulating farm practices, the Act also directs the Department of Environmental Resources to evaluate the water impacts of pollution from storm water, septic systems, wells, nonagricultural fertilizer use, and atmospheric deposition.

The U.S. Environmental Protection Agency applauded the law. William Matuszeski, director of EPA's Chesapeake Bay Program said, "I hope it's the first of...a new generation of legislation to deal with what is emerging as a more and more important problem."

Contact: Mike Krempasky, Executive Secretary, Pennsylvania State Conservation Commission, P:0. Box 8555, 400 Market St., Harrisburg, PA 17105-8555. Phone: (717) 787-5267.

Source: Nonpoint Source News-Notes, c/o Terene Institute, 1717 K Street, N.W., Suite 801, Washington, D.C. 20006, June/July 1993, No. 30.

North Carolina Adopts Nondischarge Rule for Animal Waste Management Systems

On December 10, 1992, North Carolina's Environmental Management Commission also adopted a water rule that governs animal waste management in the state. The rule affects all animal management operations (regardless of size) in the state. The rule allows animal waste management systems to be deemed permitted only if certain minimum criteria are met. In addition, feedlots with more than 100 head of cattle, 75 horses, 250 swine, 1,000 sheep, or 30,000 birds must meet special conditions in order to be deemed permitted.

As of February 1, existing animal waste management systems and new or expanded animal waste management systems constructed between February 1 and December 31, 1993 must: (1) register with DEM by December 31, 1993, and (2) submit a certification form signed by the owner and a state-designated technical specialist to DEM by December 31, 1997.

The certification verifies that the animal waste management system has been approved as a nondischarging system and that the minimum operation and maintenance standards can be met.

New or expanded feedlots constructed after December 31, 1993, must submit a signed certification form to DEM before the animals are stocked. This certification indicates that the minimum design and construction standards for the waste management system have been met and that the operation and maintenance standards can be met for a nondischarging system. The standards and specifications are based on those used by the USDA Soil Conservation Service and the North Carolina Soil and Water Conservation Commission.

Facilities that fail to submit the registration and certification forms on time or fail to follow an approved plan must obtain an individual permit from DEM and are subject to appropriate civil or criminal penalties.

Contact: David Harding, NC Division of Environmental Management, P.0. Box 29535, Raleigh, NC 27626-0535. Phone: (919) 733-5083. FAX: (919) 733-9919.

Source: Nonpoint Source News-

Notes, c/o Terene Institute, 1717 K Street, N.W., Suite 801, Washington, D.C. 20006, June/July 1993, No. 30.

American Rivers Presses Reforms at Federal Energy Regulatory Commission

Members of the National Hydropower Relicensing Coalition, which includes over 60 different environment and recreation groups led by American Rivers, are intervening in the relicensing proceedings of hydropower projects in order to restore significant environmental and recreational values to the affected rivers.

American Rivers

Members of the Coalition already have intervened in about 80 percent of the relicensing cases now pending before FERC. They have identified hundreds of deficiencies in the studies that accompanied the applications submitted by dam operators, and have successfully lobbied FERC to make river-basin-wide analyses in cases across the country. The coalition has also pushed FERC to complete additional Environmental Impact Studies, which require the licensee to consider more alternatives.

On June 17, in a move that may signal a significant change in its attitude toward environmental concerns, the FERC invited American Rivers, Trout Unlimited, and the American Whitewater Affiliation to participate In an unprecedented roundtable discussion on the future of hydropower dam licensing.

The conservation groups met with all five FERC commissioners, including Commission Chair Elizabeth Moler and four new commissioners who were appointed in mid-April. The groups presented the Commission with a platform of proposed FERC reforms that are endorsed by a coalition of over a dozen national and regional environment and recreation organizations. Moler called the meeting to discuss issues associated with relicensing hydropower projects.

Conservation groups asked FERC publicly to change the way it does business. The conservation coalition called upon FERC to take several key actions, including:

* prepare far more Environmental Impact Statements (EIS's) for projects than it currently proposes, because of the significant impacts these dams have on the environment.
* guarantee that funding for long-term maintenance and/or decommissioning of retired hydroelectric projects will be available when needed, to avoid the future problem of abandoned hydropower sites for which no one is responsible, and for which no funds are available for long-term maintenance or removal.
* encourage creative settlements between applicants, agencies and public intervenors that benefit the public interest and that can achieve broad environmental improvements and protection.
* enable the public to play a greater role in the relicensing process, and make all economic and energy data open to public inspection. Rivers are a public resource and relicensing decisions must be made in the public interest.

At the meeting, conservationists and regulators from state natural resource agencies agreed that FERC should adopt a broader perspective on the effects hydropower projects have on the environment, should address these effects on a regional basis, and should act quickly to address how long-term maintenance or removal of retired dams will be funded.

Also participating in FERC's roundtable discussion were representatives from the Interior Department, EPA, Forest Service and the natural resources agencies of Wisconsin, Michigan, New York, and Maine (states with large numbers of hydropower dams up for relicensing in 1993), the National Hydropower Association, and the Native American Rights Fund.

Cooperative Private/Public Mussel Study Underway in Illinois

Dr. Richard (Rip) Sparks of the Illinois Natural History Survey is presently conducting a study commonly referred to as the "Assessment of Zebra Mussels on the Native Mussels of the Illinois River".

The first year of the effort is to determine management options available for managing the effects of zebra mussels on native mussel species in the Mississippi River System (MRS).

Observations made by the Illinois River study to date include the following:

- Zebra mussel populations are heavier at the lower end of the Illinois River than in the middle portion of the River.
- At the higher zebra mussel population levels, native mussels are dying in very large numbers. Zebra mussels are not only thickly encrusting the native mussel shells, but are colonizing the siphon tubes and inner mantles of the native species.
- Deeper burrowing species of native mussels are thus far surviving the invasion much better

than the shallower burrowing native mussel species.

The Illinois study will be supplemented by a matching $55,000 grant from the National Fish & Wildlife Foundation and several cooperators to develop a "A pre-listing Recovery Plan for Native Mussels".

The grant is supported by:
- Tennessee Shell Company, $15,000;
- The Mussel Mitigation Trust (Cincinnati Gas & Elec) $15,000;
- The Upper Mississippi River Conservation Committee $ 7,000;
- The National Fish & Wildlife Foundation $18,500.

Funding for the second (and possibly third) year of this effort will be sought from the U.S. Fish & Wildlife Service, the States, and from other mussel/pearl industry interests.

The Illinois Natural History Survey project is intended to:

- determine what effects the zebra mussel invasion of the Illinois River has on native mussel species and beds;
- develop predictions on the zebra mussel invasion on the native mussels of the Mississippi River as a whole (assuming the information from the Illinois River provides a year or two lead-time on the remainder of the MRS).
- develop specific management recommendations for native mussels in the face of the invasion (e.g. for those species which seem to face rapid extinction, moving sufficient numbers of the species into fish hatchery raceways to assure re-introduction capability when the zebra mussel boom reaches the "bust" stage [assuming the zebra mussels and native species can co-exist at lower, "bust", population levels of zebra mussels).

TVA biologists informed us at the Annual AFS meeting in Portland that TVA is already holding native Tennessee River mussels in holding ponds or raceways at one of their facilities in hopes of avoiding zebra mussel impacts.

Black Carp vs. Zebra Mussel?

A May 1993 issue of the Water Farming Journal discussed the potential use of the Asian black carp to control zebra mussels.

The article, by Carroll Trosclair, cites three major challenges to developing a market for the species: (1) "They must convince conservation officials that the black carp would be less harmful to other animals and vegetation than the zebra mussel already is, (2) To do that they must turn the black carp into a non-reproducing triploid, just as farmers have done with the grass carp, (3) They must accelerate production to meet what could be a tremendous overnight demand for black carp."

Source: The Lateral Line, Volume 7, Number 3.

Montana Local Water Districts Make A Splash

The 1991 Montana Legislature passed Senate Bill 136 allowing counties to set up water districts to protect, maintain, and improve water. Each district is authorized to set fees to achieve its objectives.

Lewis and Clark county commissioners initiated the first local water district encompassing the Helena Valley watershed in February 1992. It was established after four months of public discussion and hearings. The city councils of Helena and East Helena passed resolutions to join the proposed district.

The first order of business was to appoint a board of directors consisting of a county commissioner, and a member from Helena and one from East Helena. It also includes a member from the city/county board of health, another from the Lewis and Clark Conservation District, and interested citizens.

The board designs the program and activities of the district and submits them for approval to the Montana Board of Health and Environmental Sciences. This assures there will be no duplication of services between state and local programs. It also allows the district to request authorization to enforce certain aspects of the Montana Water Act.

The Lewis and Clark County Water Protection District has adopted a comprehensive program that it calls CAP--Clean Aquifer Program. This program includes water monitoring, toxic/hazardous material spill remediation, stormwater drainage inventory, and wellhead protection. It also will provide a used motor oil collection center and an education program for pesticide use reduction and household hazardous waste disposal.

For more information on Montana's local water districts, contact Carole Mackin, Environmental Specialist, Water Bureau, Cogswell Building, 1400 Broadway, Helena, MT 59620. Phone: (406) 444-2406.

Source: Nonpoint Source News-Notes, c/o Terene Institute, 1717 K Street, N.W., Suite 801, Washington, D.C. 20006, June/July 1993, No. 30.

Guide to Construction of Stormwater Wetlands Released

The Metropolitan Washington Council of Governments has produced a manual that presents integrated and comprehensive design criteria for the construction of stormwater wetland systems. The manual, authored by Tom Schueler of the Anacostia Restoration Team, reviews four basic design variations for stormwater wetlands and reviews factors that improve pollutant removal capability.

Design of Stormwater Wetland Systems covers:

- sizing stormwater wetlands to avoid secondary environmental impacts;
- creating deep-water cells to enhance wildlife habitat;
- developing pondscaping plans to create community amenities, and;
- reducing maintenance

The manual also includes a review of wetland performance monitoring data and a revised native plant guide for pondscaping.

The Guide is available from the Metropolitan Washington Council of Governments (MWCOGA), 777 North Capitol St., NE, Suite 300, Washington, DC 2002-4201 for $25. Make checks payable to MWCOG.

Source: Nonpoint Source News-Notes, c/o Terene Institute, 1717 K Street, N.W., Suite 801, Washington, D.C. 20006, June/July 1993, No. 30.

Meetings of Interest

November 1-3, 4th National Pesticide Conference: New Directions in Pesticide Research, Development, Management, and Policy, Richmond, VA. Contact: Dr. Diana Weigmann, VA Polytech, VA Water Resources Res. Center, 617 North Main St., Blacksburg VA 24060-3397. (703) 231-5624 or 231-6673. Sponsored by the VA Water Resources Research

November 4-7, The Future of America's Rivers - A Celebration of the 25th Anniversary of the National Wild and Scenic Rivers Act, Arlington, VA. Sponsored by American Rivers and cosponsored by River Network, National Park Service, U.S. Forest Service, U.S. Bureau of Land Management, U.S. EPA, U.S. Bureau of Reclamation, and U.S. Fish & Wildlife Service. The conference will review current national river policy and shape future river protection directions, and enhance grassroots river protection efforts.

November 19, Wetland Issues in Resources Development in the Western U.S., Denver, CO. Contact: Mark Holland, Rocky Mountain Mineral Law Foundation, Porter Administration Bldg. 7039 East 18th Ave., Denver, CO, 80220. (303) 321-8100. Sponsored by RMMLF and the American Bar Association.

December 6-8, Marina and Boating Environment Conference and Trade Show, Atlanta, GA. Contact: Susan Santoro, International Marina Institute, 35 Steamboat Avenue, Wickford, RI 02852. (401) 294-9558. FAX: (401) 294-1630. Sponsored by the International Marina Institute with the Clean Marina Program Consortium. Conference issues: marina and boatyard facility siting and design; environmental regulation and law; boat sewage and wastewater; fuel, oil and hydrocarbons; stormwater and nonpoint pollution runoff; hazardous materials, trash and recycling; boat repair and maintenance; dredging and beneficial uses of marina bottom soils; boat usage, cleaning, and maintenance; and marina and boater education.

December 11-15, 55th Midwest Fish & Wildlife Conference - New Agendas in Fish and Wildlife Management: Approaching the Next Millennium, St. Louis, MO. Contact: Wayne Porath, MO Dept. of Conservation, 1110 S. College Avenue, Columbia, MO 65201. (314) 882-9880.

April 17, 1994, The International Erosion Control Association 25th Annual Conference and Trade Exposition, Reno, NV. Contact: IECA, P.O. Box 4904, Lincoln Avenue, Suite 103B, Steamboat Springs, CO 80477-4904. (303) 879-3010. FAX: (303) 879-8563. Topics include innovative applications for solving erosion control problems; soil bioengineering methods and techniques; wind erosion in arid environments; erosion control for urban construction sites; streambank and shoreline stabilization; steep slope stabilization; how to meet permit requirements; erosion control in the third world; and research and development.

April 17, 1994, Responses to Changing Multiple-Use Demands: New Directions for Resources Planning and Management, Nashville, TN. Contact: Ralph H. Brooks, General Chairperson, Tennessee Valley Authority, Water

Management, Evans Bldg., Rm. IW 141, Knoxville, TN 37902. (615) 632-6770. American Water Resources Association Annual Spring Symposium. Topics will include water use trends, water-resources forecasting, hydrologic modeling, GIS tools, water pricing policies, water allocation, water law, BMPs, environmental impact mitigation, reservoirs, and hydropower licensing.

August 3-6, 1994, Sixth International Symposium On Regulated Streams (SISORS II). The University of South Bohemia, Ceske Budejovice, Czech Republic. SISORS II is the sixth in an on-going series of International Symposia devoted to scientific research of rivers modified by large dams, weirs, channelization and flow diversion schemes. Contributed papers are invited on the following topics:

- Effects of dams, weirs, channelization or inter-basin transfers on plankton, macro-invertebrates, periphyton, macrophytes and fish;
- Effects of river regulation on estuarine, wetland and floodplain ecology;
- Water-of river-reservoir systems;
- Fisheries management;
- River restoration;
- Conservation of river margin and floodplain systems;
- River regulation and integrated basin management. Contact: Professor G.E. Petts, Department of Geography, University of Technology, Loughborough, Leicestershire, LEII 3TU, UK.(Fax: 509 262192), or Dr. K. Prach, Faculty of Biological Sciences, Jihoceska Univerzita, Branisovska 31, 37005, CESKE BUDEJOVICE, Czech Republic. (Fax: 038 45985).

Congressional Action Pertinent to Mississippi Basin Rivers

Biodiversity

H.R. 1845. Authorizes National Biological Survey as new agency in the Interior Department. House Science panels held hearing Sept. 14.

S. 1110 (Akaka, D-Hawaii) authorizes creation of National Biological Survey in Interior Department.

Budget

H.R. 2118 (P.L. 103-50) On July 2, President Clinton signed the supplemental fiscal 1993 appropriations bill that includes $70.5 million for Rural Development Administration funding for water and sewer loans and grants. The bill includes no money for similar EPA grants or loans but restores $5 million in start-up funding for the Udall Scholarship Foundation that the House sought to cut.

H.R. 2445 (H.Rpt. 774:103-135) On June 24, the House passed, the energy and water appropriations bill for fiscal 1994, which includes money for Army Corps of Engineers and Bureau of Reclamation.

Endangered Species

S. 1440 (Burns, R-MT) provides flexibility in meeting Endangered Species Act requirements and calls for peer review before listing.

Fish & Wildlife

The Senate Indian Affairs Committee held hearing June 15 on proposal to establish program within Bureau of Indian Affairs to improve management of Indian fish, wildlife, trapping, and recreational resources.

H.R. 2495 (Applegate, D-Ohio) directs interior secretary to transfer Seneca National Fish Hatchery to state of Ohio.

H.R. 2500 (Gunderson, R-Wis.) House Merchant Marine panel held hearing August 3. Bill seeks to develop federal strategy to manage interjurisdictional fisheries in Mississippi River Basin.

H.R. 2343 (P.L. 103-45) Signed by President Clinton on July 1 allowing states to bar raw log exports off state lands. Clinton also released outline of old-growth forest/endangered species protection plan aimed at resolving Northwest logging debate. On June 24, a Senate Agriculture panel held a hearing on Clinton administration proposal to phase out below-cost timber sales.

Government

H.R. 2601 (Conyers, D-Mich.) elevates the Environmental Protection Agency to Cabinet-level Department of Environmental Protection.

H.R. 2761 (Unsoeld, D-Wash.) transfers ocean, coastal and fisheries programs in the National Oceanic and Atmospheric Administration to Interior and proposed Environmental Protection departments.

H.R. 2918 (Brown, D-Calif.) establishes National Institute for the Environment.

Land Conservation

H R. 2416 (Hinchey, D-N.Y.) authorizes $79.5 million annually in grants for private-public partnerships to identify and protect important natural, historic, cultural and scenic areas.

Public Lands

H.R. 2010 Awaiting President Clinton's signature is H.R.2010, the national service bill that creates Public Land Corps for 16-to-25 year-olds to do disaster relief work and conservation work on public land, Indian and Hawaiian home lands.

H.R. 2520 House dropped provision in Interior Appropriations Bill July 14 that would have raised grazing fees by 33 percent.

H.R. 2530 The House Natural Resources Committee approved on June 30 reauthorizing spending for Bureau of Land Management programs for one year to give Clinton administration more time to fashion a more comprehensive measure. On September 13, the House passed H.R.2530, which reauthorizes spending for BLM programs through fiscal 1995. On September 14, the Senate amended H.R.2520, the fiscal 1994 Interior spending bill, to bar implementation of the Clinton administration's grazing fee hike and rangeland reform proposal.

S. 1163 (Kerry, D-Mass.) phases in raise in grazing fees to fair market value.

S. 1326 (Campbell, D-Colo.) is rancher-backed grazing fee bill that would use new formula to set fees, with 25 percent cap per year.

Water Projects

S. 1373 (Wotford, D-PA) improves repayment of costs for new irrigation projects.

Water and Wetlands

H.R. 1566 Seeks to simplify wetland regulations for farmers. Two House Merchant Marine panels held hearing July 28.

H.R. 2543 (Oberstar, D-Minn.) authorizes $2 billion to be spent over 4 years on development and state implementation of non-point source pollution reduction programs with penalties for non-compliance.

S. 1114 (Baucus, D-Mont.) reauthorizes spending for the Clean Water Act. Senate Environment panel held opening hearing on June 16, succeeding hearings were held June 23, July 1 and July 14, July 27, August 4 and 5.

S. 1140 (Kerry, D-Mass.) and **H.R 2441** (Studds, D-Mass) allow federal tax deduction for portion of annual water and sewer bill that exceeds more than 1 percent of adjusted gross income and eliminate corporate deduction for environmental damage payments.

S. 1195 (Boxer, D-Calif.) expands and strengthens wetlands protection under Clean Water Act.

S. 1304 (Baucus, D-MT) is major wetlands reform bill.

Wild & Scenic Rivers

H.R. 914 Designates l9 miles of Red River in Kentucky as wild and scenic river.

H.R. 1584 On July 29, a House Natural Resources panel approved, which designates 14.5 miles of the New River in West Virginia as scenic river.

Wilderness

H.R. 631 (P.L. 103-66) On August 13, President Clinton signed. Designates 611,730 acres of Bureau of Land Management and Forest Service land in Colorado as wilderness.

H.R. 2473 A House Natural Resources panel held a hearing July 20 on H.R. 2473, the Montana wilderness Bill.

Source: Land Letter, July 15, 1993, Vol. 12, No. 20 and September 15, 1993, Vol. 12, No. 24.

River Crossings

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H.R. 2500, Cooperative Interjurisdictional Rivers Fisheries Resources Act of 1993 Update

H.R. 2500 became part of history sometime during this fall's Congressional debates over the Flood of 1993, healthcare, NAFTA, and other issues. With that kind of competition it just never reached Congressional radar screens.

However, it did receive a Committee hearing in early August, and was co-sponsored by 10 Congressmen. In addition to Gunderson (WI); Congressmen Williams (MT), Sabo (MN), Johnson (SD), Bereuter (NE), Tauzin (LA), Barlow (KY), Boucher (VA), Yates (IL), and Minge (MN) all co-sponsored the Bill.

"Happy Holidays"

Congressman Gunderson informed us in mid-November that he plans to reintroduce the bill again next year if the states wish him to do so. With all the current discussions going on involving the interjurisdictional nature of the flood, effects of levees, floodways, watershed management, ecosystem management, and biodiversity, it seems that legislation like the *Cooperative Interjurisdictional Rivers Fisheries Resources Act* is becoming more important. Perhaps 1994 will its year.

Supporters are urged to again make their interests in this legislation known to Gunderson and to their respective Congressmen.

MICRA By-Laws

MICRA Chairman Jim Fry (MO) will begin the process of developing MICRA By-Laws this winter. Up until the last Steering Committee meeting MICRA had been operated very informally.

The need for more formal By-Laws became apparent at the Annual Meeting when the Steering Committee needed to formally approve the Paddlefish/ Sturgeon Committee Strategic Plan. Since a quorum had not been officially defined by MICRA, and all

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states were not present at that meeting, the document could not be approved. So Chairman Fry has been conducting a mail and telephone vote of all Steering Committee members. He felt it was necessary, until we have a set of By-Laws to operate under that everyone must be given the opportunity to be heard.

Fry plans to use By-Laws already developed and adopted by the Upper Mississippi River Conservation Committee (UMRCC) and the Lower Mississippi River Conservation Committee (LMRCC) as models.

He hopes to have a draft ready for review before the spring MICRA Steering Committee meeting that he plans to schedule in conjunction with the meeting of the American Fisheries Society Fish Administrator's Section to be held in mid-May in Kansas.

MICRA Paddlefish/Sturgeon Strategic Plan

As noted above, MICRA Chairman Fry circulated the MICRA Paddlefish/Sturgeon Committee Strategic Plan for review and approval by Steering Committee members in late July. He informs us that all but three of the member states have signed on in support of the agreement.

Once the document is approved by all members, Paddlefish/Sturgeon Committee Chairman Graham (MO) will schedule a Committee meeting to begin dividing work activities among participating members, and to assist in further development of member work plans. This meeting is anticipated for late winter/early spring.

Pallid Sturgeon? Still Being Held in Missouri

On September 28 Jerry Presley, Director of the Missouri Department of Conservation advised the Fish and Wildlife Service (Region 6 Denver) of his intention to stock some 9,000 pallid sturgeon (being held at Missouri's Blind Pony fish hatchery) into the Missouri and Mississippi Rivers on November 1, 1993.

Presley's letter stated that as the sturgeon have grown, they have become more pallid-like, particularly in diagnostic features such as snout length and barbel placement.

Missouri's motivation for stocking the sturgeon are the continually increasing holding and feeding costs. The sturgeon, hatched in 1992, are still under evaluation for genetic purity at a private lab in Texas.

John L. Spinks, Deputy Regional Director, Fish and Wildlife Service Region 6, did not support Missouri's November 1 stocking proposal, citing three primary reasons:

1. The Pallid Sturgeon Recovery Team believes the probability is too great for the subject sturgeon to be a pallid/shovelnose sturgeon hybrid.

River Crossings

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They have reinforced an earlier recommendation that a stocking effort not occur until the genetic evaluation being conducted by Genetic Analysis Inc., is completed. Also the Mississippi Interstate Cooperative Resource Agreement, Paddlefish/ Sturgeon Subcommittee, and the Policy Committee recommended to the recovery team on November 4, 1992, that *release of pallid sturgeon would only occur if genetics analyses confirm that they (the subject sturgeon) are, indeed pallid sturgeon and not a hybrid*. The DNA analysis that is underway may soon reveal new information on genetic risks of a stocking action, but I do not believe that this information will be available for evaluation in time for a November 1 stocking date.

2. The 9,000 sturgeon proposed for stocking are the surplus products of a very successful propagation effort designed to determine spawning methodologies and produce sturgeon progeny for broodstock, research on growth and development, feeding trials, rearing facility requirements, genetic analysis, environmental contaminant analysis, aging, tagging studies, and public outreach. The proposed stocking aspect of this propagation would be occurring in advance of work on a recovery plan task calling for development of stocking plans that will evaluate risks and needs based on background populations and consider genetic ramifications. Currently, there has been no evaluation as described above that identified a recovery need for the stocking action to occur. The Fish and Wildlife Service (Service) believes there is a need to more closely investigate genetics management of this species before carrying out stocking programs.

3. Based upon the successful spawning and rearing activities conducted at Blind Pony Hatchery and based on information relayed to me by Mr. Mark Dryer of the recovery team, it appears that future hatchery production of pallid sturgeon will not be a problem when and if needed for recovery. Even if the subject sturgeon progeny are sacrificed and are later determined to be pallid sturgeon, they appear to be readily replaceable in the future. Either holding the sturgeon at Blind Pony Hatchery until next spring or sacrificing them appears to be our only alternatives to stocking in November. I understand, based on discussions between Mr. Dryer and Mr. Kim Graham of your Department, that feed for the sturgeon could approach $20,000 for the period between now and March 1, 1994, when river conditions will permit a spring stocking. Also, by March 1 results of the genetic testing will have been evaluated. Should you determine to hold the sturgeon until next spring, I am hopeful that the Service can contribute one half or up to $10,000 toward the expense of feeding and holding them. I cannot presently commit to any funding assistance because the Service is in the process of determining budget allocations for this fiscal year, which began in October.

Spinks further said that when or if stocking occurs, the Service recommends that Missouri's proposed 1992 stocking plan be followed:

- All stocked sturgeon be tagged with coded wire tags and all would be tagged externally.

- The sturgeon be stocked at 15 to 20 sites in the Missouri and Mississippi Rivers in Missouri (Spreading the stocking sites over many river miles would reduce the concerns about genetic swamping and likely increase post-stocking survival).

- Monitoring for stocked sturgeon be conducted through sampling efforts incorporated into Missouri's fishery programs.

- At least 500 sturgeon be retained for continuing development studies, telemetry studies, and future broodstock.

Pallid Sturgeon Genetic Analysis

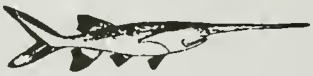
Genetic analysis continues with DNA being isolated from blood samples of 190 pallid, shovelnose, and hybrid sturgeon. Segments of the DNA were amplified from sturgeon representing many different populations. Pallid sturgeon upstream of Ft. Peck and shovelnose sturgeon downstream of the Powder River were focused on because these populations would likely best represent the species, genetically.

Dr. Morizott plans to perfect the thermal profile and the reaction mixture in order to obtain a strong single band of amplified DNA. If a strong, single band is not consistently amplified using the above criteria, he will gel-purify the amplified DNA. Once this is finished, the DNA patterns will be compared between the pallid, shovelnose, and hybrid sturgeon.

Source: Pallid Sturgeon Recovery Update, November, 1993, No. 7

Attention All Sturgeon and Paddlefish Researchers and Managers

In 1991, the U.S. Fish and Wildlife Service compiled a database of sturgeon and paddlefish researchers and managers, along with their area of interest and expertise. An update of this database will be completed in December 1993, in hopes of expanding communications and coordination among biologists working in this similar area of interest.



If you would like to receive the database entry form for inclusion of your work, please contact Laura Jenkins, U.S. Fish and Wildlife Service, Panama City, Florida, at 904/769-0552. All responders will receive a copy of the database.

The Floods of 1993

Debate continues over the appropriate response to the great floods of 1993.

A series of two workshops held in St. Louis (August and September) by the Association of State Floodplain Managers and the Association of State Wetland Managers involving over 300 participants from states, local governments, universities, federal agencies, and interest groups recommended that the White House, federal agencies, and Congress:

- Provide real alternatives to floodplain occupants and local governments in their choice of options in responding to flood damage and reducing future damages by providing more flexibility in the use of disaster assistance funds and allocating additional funds, if necessary, to broaden the range of alternatives to include relocation *buy outs*, structural flood proofing, creation of greenways, wetland restoration and other alternatives.

- Create a flood clearing-house and improve and tailor the delivery mechanisms for technical assistance, grant-in-aid, and other forms of assistance to the needs of various groups affected by flooding and more actively involve these groups in formulating and implementing long-term solutions.

- Rapidly develop certain types of *priority* information and data critical to short and intermediate flood responses including more information concerning levees and wetland restoration sites.

- Establish demonstration projects to show how processes can work and determine the effectiveness of various approaches.

- Provide planning and technical assistance to states and communities.

- Treat flooding in the upper Mississippi basin as a prototype or *case study* to suggest possible future directions for multi-objective floodplain and watershed management and the restoration of aquatic ecosystems in other areas of the nation.

- Establish a *blue ribbon* commission as a first step in designating the upper Mississippi and its sub-basins as a special, multipurpose watershed planning, management, and restoration area with the goal of rebuilding communities (both human and natural).

At the present time, it seems likely that all of the federal levees will be rebuilt to pre-flood condition, but several hundred non-federal, ineligible levees remain in question. Missouri Congressmen have been especially vocal about federal support to rebuild all the levees, because most of the levees along the Missouri River were non-federal and therefore ineligible for assistance; and most of those levees failed during the flood.

The real question involves *buyouts*. Senate Bill 1670 which recently passed Congress provides for buyout of much of the residential property damaged by the flood. Included in that bill were the following caveats:

- Any property acquired, accepted, or from which a structure will be removed pursuant to the project will be dedicated and maintained in perpetuity for a use that is compatible with open space, recreational, or wetlands management practices.

- On or after the date of enactment of this subsection, the applicant for the assistance enters into an agreement with the Director that provides assurances that: (1) any property acquired, accepted, or from which a structure will be removed pursuant to the project will be dedicated and maintained in perpetuity for a use that is compatible with open space, recreational, or wetlands management practices; (2) no new structure will be erected on property acquired, accepted or from which a structure was removed under the acquisition or relocation program other than: (a) a public facility that is open on all sides and functionally related to a designated open space, (b) a rest room, or (c) a structure that the Director approves in writing before the commencement of the construction of the structure; (3) after receipt of the assistance, with respect to any property acquired, accepted or from which a structure was removed under the acquisition or relocation program: (a) no subsequent application for additional disaster assistance for any purpose will be made by the recipient to any Federal entity; and (b) no assistance referred to in subclause (a) will be provided to the applicant by any Federal source.

This legislation seems to be well written and President Clinton is expected to sign it.

Buyout of residential property on the floodplain is certainly needed, but the real long-term need is for acquisition of some of the floodplain ag land for return to wetlands or *dry-year farming*. Only then will adequate floodplain storage be provided to address the needs of future flood conveyance and to offset future flood losses; to say nothing of the obvious ecological benefits such a program would provide for river fisheries resources.

In response to all this the White House is assembling a group of interagency scientists and planners to compile and evaluate all available information on floodplain and watershed management, the flood, and the flood's aftermath. Using this information the group will develop (over the next six months) flood response recommendations for review by the Administration and Congress in an effort to assist in developing an appropriate response to this and future floods.

Ultimately a major goal will be to develop new National Floodplain Management Policies which will reduce or eliminate losses such as those caused by the floods of 1993.

The White House sponsored project is especially timely, since all indications are that a flood of 1994 is highly likely. All of the soils and water storage capabilities of the upper midwest are saturated going into winter, snows have come early to the Dakotas and Minnesota, its still raining in Missouri, and all of this moisture will be freezing into the ground awaiting the spring thaw. This coupled with the chance of normal spring rains sets the stage for another record flood event in 1994!

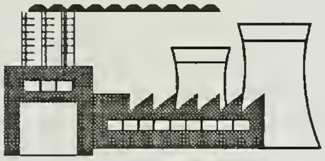
The Association of State Floodplain Managers is planning another series of workshops, presently entitled, *Local Government Post Disaster Recovery: 'Buy Outs', Relocation, Greenways, and the Restoration of Waterfronts* for the coming months. Interested individuals should contact:
John Kusler, Association of State Floodplain Managers, P.O. Box 2463, Berne, NY 12023, (518) 872-1804, FAX (518) 872-2171.

For more information on the White House Flood Response Study Contact: Kathleen A. McGinty, Deputy Assistant and Director, White House Office of Environmental Policy, 1600 Pennsylvania Avenue, Old Executive Office Building, Washington, D.C. 20500

Nuclear Power Plant Near Omaha Threatened by the Flood of 1993

A largely unknown and unreported (by the media) incident occurred in early August (during the Flood of 1993) at the Cooper Nuclear Power Plant near Brownsville, Nebraska. The Cooper Plant is located on the Missouri River floodplain about 60 miles south Omaha.

According to Dr. Jack F. Shroder, Jr., Professor and Chairman of the Department of Geography and Geology at the University of Nebraska at Omaha, flood waters came within 6 inches of overtopping the dike surrounding the plant. U.S. Army, Corps of Engineers workers were reportedly stationed all along upstream agricultural (ag) levees, in radio communication with headquarters, preparing to break the ag levees to protect the nuclear plant.



In the meantime, just like out of an episode of the *Simpsons* tv show, it was *every man for himself* as plant workers abandoned the Power Plant, which according to Shroder, apparently could not be shut down on such short notice.

Shroder said plant officials were very nervous about the situation. Reprieve came when one of the upstream ag levees broke on its own under the pressure of the flood.

Disturbing is the fact that the nuclear plant wasn't afforded a high enough level of protection to compete with the protection provided to adjacent ag lands. More disturbing is the fact that the nuclear plant was placed in jeopardy, right up to the last minute, and had to be abandoned while in operation -- in the interest of protecting upstream ag lands!

Furthermore Shroder said, in public hearings about the flood a number of Corps officials were uninformed about whether dikes around nuclear power plants were supposed to be built for floods of 100-year, 500-year or 1000-year probability, as they stated differently on three separate occasions.

Even Homer Simpson would likely be disturbed at the insanity of threatening a nuclear power facility in the name of protecting ag lands!

Set-Aside Flood Relief

On October 8, 1993, in a letter to President Clinton, Illinois Governor Jim Edgar proposed using farm set-aside acres to offset losses to floodplain farmers.

Edgar's letter says that (1) thousands of farm acres remain flooded; (2) it will be very difficult, if not impossible, for farmers to return to their fields next spring; (3) farmers who are back may face problems with the land, resulting in reduced productivity, and (4) uncertainties exist over buy-outs, mitigation decisions, and understanding federal programs.

As a flood response alternative, Edgar proposes authorizing the United States Department of Agriculture (USDA) to issue production certificates for croplands affected by 1993 flooding. These production certificates could then be offered for sale by the flood-area farmers to upland farmers participating in the USDA commodity program. With the purchase of such certificates, the farmer unaffected by the flood would be allowed to plant their set-aside acres to crops and still maintain program eligibility.

If properly designed, this program would result in no added costs to the federal government and the taxpayers for farm program payments, however, it would provide significant benefits to floodplain farmers and to floodplains. Farmers, devastated in 1993 by the flooding of their crops, could receive income next year from the sale of the production certificates, while floodplain farmlands could remain idle. The income would be derived from other farmers, not the United States Treasury. The value of the certificates would be determined by the marketplace, not government controls.

Farmers purchasing the certificates would be allowed to plant crops on their set-aside acres and increase their potential income. Although their production acres would increase, the additional acres in production would be offset by the acres removed from production by flood-area farmers. There would be no overall increase in production acres in 1994 above what the USDA would expect in a normal year.

According to Edgar this proposal would stabilize agricultural production and sales by agricultural suppliers. It would decrease the level of anxiety in the farm community, particularly for farmers waiting all winter not knowing if they will have a crop next year.

Edgar goes on to say that the production certificate proposal not only offers a way to provide short-term help to flood victims, but it may have application for addressing long-term concerns, as well. Edgar says implementation of a one-year program could help to develop spin-off concepts to address other natural resource protection needs.

In theory, if this practice continued into the future, floodplain lands could be allowed to revert to wetlands. This would be good for floodplains, and large river fisheries, but it would also put more uplands into production, possibly increasing erosion in those areas and sedimentation problems downstream.

The idea seems to hold some merit, especially in relatively *flat* farming areas like northern Illinois, but it needs to be fully thought out and developed to guarantee against trading one problem for another.

For more information on Governor Edgar's proposal contact: Becky Doyle, Director of the Illinois Department of Agriculture, or Michael D. Platt, Executive Director of the Heartland Water Resources Council.

Floodplain Farmland Restoration Costs

Secretary of Agriculture Espy recently visited with Missouri River Floodplain farmers near Jefferson City, MO to discuss flood response options. One land owner stated on live television that it is cheaper for him to buy new land than it is to restore lands he owns. He's right!

According to a USDA, Soil Conservation Service Extension Bulletin entitled, *Reclaiming Cropland - Bringing Flood-Damaged Cropland Back Into Production (September 1993)*, the costs of reclaiming one acre of farmland covered by one foot of sand (1,600 yds^3) is about $3200 ($2 per yd.).

"Big Bucks"

Sand deposits over much of the Missouri River floodplain farmland range from 6 in. to 10 ft. deep. Removal costs could thus be estimated to range from $1,600 to $32,000 per acre.

Pre-flood market values for Missouri River floodplain land was $600 to $1,100/acre. How can the government possibly justify spending 3-30 times the market value of this land to restore it. Certainly, a bank wouldn't make such an investment!

However, while these lands have lost value as farmlands, they have gained tremendous value as wetlands and as a wide variety of fish and wildlife habitats. Prior to the flood, the Fish and Wildlife Service (Service) was contemplating acquiring some of these lands as part of their endangered species (pallid sturgeon, least tern, and piping plover) recovery efforts.

It would have taken the Service decades to accomplish the amount of habitat rehabilitation that the river provided in one short summer. The challenge now is to acquire some of these *rehabilitated* lands as public wildlife lands and greenways before they are *restored* to private farmland at great public cost, only to remain *in harms way*, subject damage by the next flood -- which could occur as early as next summer!

Private Fisheries Groups Contact President Clinton Regarding the Federal Response to Flooding

September 23, 1993

Dear President Clinton:

Disasters such as the recent Midwest flood cause extensive damage, but they also require and create opportunities for change.
Now that the needs of people are being met, attention has shifted toward restoring and rebuilding floodplain infrastructure to pre-flood conditions. Our federal programs are poised to place people back in harm's way.

A broad coalition of the nation's fishing groups stand united in our opposition to blind restoration of ill-advised floodplain development. We suspect this position reflects the predominant position among the nation's taxpayers as well. As a nation, we cannot continue to burden the taxpayer with catastrophic flood-related losses when suitable alternatives are available and feasible.

We therefore urge your serious consideration of this unique opportunity to approach river and floodplain planning with long-term flood loss reduction in mind. We must move away from structural solutions that separate the river from its floodplain, and toward solutions that take advantage of natural flood control functions. Plans must include consideration of river-connected wetlands, critical large river fishery resources, and their associated riverine aquatic habitats.

Many of our large river fish stocks are in decline, severely depleted or threatened by continuing habitat losses and water quality deterioration. Sedimentation, channelization and floodplain encroachment through dike and levee construction are major factors in the decline and degradation of riverine aquatic habitats. Vital spawning and nursery areas continue to be lost or access denied because of unwise use of the floodplain. The cumulative results are major reductions in associated recreational opportunities.

It should be increasingly clear that current "engineering only" solutions to flood control and river management are unsuccessful. Despite a huge federal investment in levees, dams, and dikes, per capita flood losses have more than doubled. Constraining rivers to ever smaller channels through levee and channelization projects has produced higher flood stages and more extensive property damages when flooding does occur.

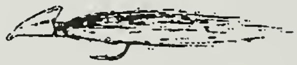
Let this be a turning point in our management of our rivers and their associated resources and floodplains. A comprehensive national flood control policy that establishes nonstructural solutions and sound floodplain management must be developed and enforced to reduce future flood losses. At the same time, we must begin to restore the functional integrity of river ecosystems.

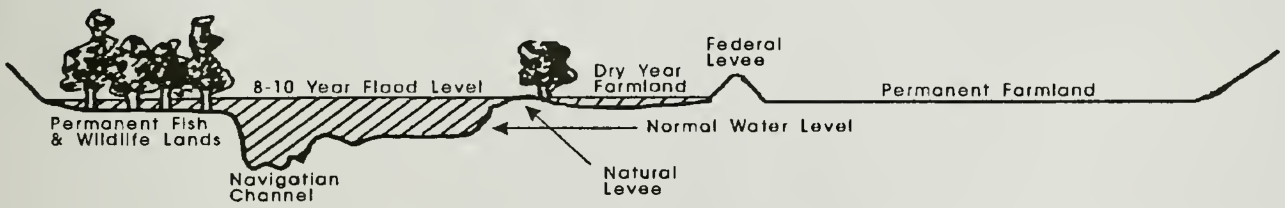
We strongly endorse a floodway concept, similar to the one being discussed for the Missouri River, and believe this philosophy can be applied equally well to the Mississippi and other flood-prone large rivers and their tributaries. Large rivers must retain access to larger portions of their floodplains, to cushion flood impacts and to support ecosystem productivity.

The letter was signed by American Rivers, American Fisheries Society, Trout Unlimited, B.A.S.S., Inc., Sport Fishing Institute, American Fishing Tackle Manufacturers Association, and the Izaak Walton League of America.

The floodway concept (shown below) referred to in this letter is the one first described in *River Crossings*, Vol.2, No. 4, July/August, 1993, and later distributed as a Fish and Wildlife Service unpublished document, entitled, *The River Floodway Concept - A Reasonable and Common Sense Alternative for Flood Control* by Jerry L. Rasmussen and Jim Milligan. Copies of the paper are available upon request by contacting the MICRA office.

Source: SFI Bulletin No. 449, October 1993





Proposed floodway works with nature storing flood water in floodplains, meeting multiple use objectives, while protecting prime developed lands, urban, and industrial areas from high river stages.

McKnight Foundation Supports American Rivers Flood Response Efforts

Scott Faber has recently been named director of floodplain programs at American Rivers. This new position is being initially funded through a grant from The McKnight Foundation (Minneapolis) in support of American Rivers' work in the Upper Mississippi River basin in the wake of this summer's flooding.

Other McKnight Foundation Grants for Mississippi River projects include the following:

- A grant of $188,000 made to the Southern University Center for Energy & Environmental Studies, Baton Rouge, will support preparation of annual reports assessing environmental conditions along the Mississippi River corridor in Louisiana.

- A grant of $112,500 made to The Coalition to Restore Coastal Louisiana, Baton Rouge, will fund an evaluation of ways to improve state and local policies affecting land use in the river corridor in Louisiana.

- The Mississippi Headwaters Board, Grand Rapids, was awarded $70,000 over two years, to establish a volunteer water-monitoring network on the upper Mississippi.

- Winona State University, Winona, MN, was granted $25,000 over two years, to train high school teachers participating in the Minnesota Great River Program.

- Institute for Conservation Leadership, Washington, D.C. was granted $28,000 to strengthen the recently formed Mississippi River Alliance.

- The Sierra Club Foundation, San Francisco was granted $75,000.

The McKnight Foundation is a private charitable foundation with a primary interest in assisting people who are poor or disadvantaged by enhancing their capacity for productive living. The Foundation also seeks to strengthen community and community institutions, to enrich people's lives through the arts and to encourage preservation of the natural environment. The Foundation's primary geographic focus in its human services and arts grantmaking is the state of Minnesota.

However, the Foundation has made a $9 million five-year commitment to protect, preserve and restore the Mississippi River along its entire length.

Natural Resource Agency Budgets For Fiscal 1994

The Clinton Administration, through Interior Secretary Bruce Babbitt has made a strong commitment to improving the nation's natural resource management. This commitment is demonstrated by the stand taken by the Interior Department on grazing fees and other federal budget issues.

Controversy surrounding the public land grazing fee and a rangeland reform proposal adopted by Interior conferees delayed final passage of the FY 94 Interior spending bill, but a last-minute filibuster was avoided in the Senate, when Sen. Max Baucus (D-MT.), Sen. Kent Conrad (D-ND) and Rep. Byron Dorgan (D-ND) asked Senate leaders Oct. 18 for the fee agreed to in conference Oct. 14 to be phased in over six years rather than three as the conferees accepted. The day after conferees accepted the compromise, Sen. Harry Reid (D-NV), Interior Secretary Bruce Babbitt and House Natural Resources Committee chairman George Miller (D-CA) held a news conference to warn senators that defeating the compromise would ensure that the more expensive plan proposed by Babbitt in August would move forward.

Beyond the grazing issue, Interior conferees generally agreed with the Clinton administration's spending emphasis on natural resource programs, although at lower levels in most cases. Among the exceptions were funding for the Army Corps of Engineers and the Bureau of Reclamation, which received substantially more money than the administration wanted for water projects. Clinton also called for $370 million to be spent on the Agriculture Department's wetlands reserve program, but Congress agreed to $300 million less. Conferees were slightly more generous in land acquisition spending, giving the four agencies $41 million more than the administration wanted--but $29 million less than last year.

Listed below are fiscal 1994 budgets for selected natural resource programs at the Bureau of Land Management, Fish and Wildlife Service, Forest Service, National Biological Survey, and the National Park Service contained in H.R. 2520; Agricultural Stabilization and Conservation Service and Soil Conservation Service contained in the Agriculture appropriations bill, H.R. 2493 (which cleared Congress Oct. 14 and awaits President Clinton's signature); Environmental Protection Agency contained in the VA-HUD bill, H.R. 2491 (which still awaits final approval of Congress); and Corps of Engineers and the Bureau of Reclamation contained in H.R. 2445, the energy and water spending bill (awaiting final approval by Congress).

Land and Water Cons. Fund	($000)
Bureau of Land Management	12,122
Fish and Wildlife Service	82,655
Forest Service	64,250
National Park Service	95,250
State Grants (minus Adm. exp.)	24,750
Total	254,277

ASCS	($000)
Ag. Conservation	194,650
Water Qual. Incentives	18,500
Forestry Incentives	12,820

Water Bank	8,000
Emergency Cons. Program	–
Colo. Riv. Salinity Control	13,783
Conservation Reserve	1,743,274
Wetlands Reserve	66,675
Total	2,039,202

Until Congress passes judgment on the Clinton administration's plan to dismantle and redistribute the programs of the Agricultural Stabilization and Conservation Service (ASCS), funding for its programs will continue. Congress approved a 12% boost in funding for the agency, most of which is due to a $165 million boost in spending for the conservation reserve program and nearly $67 million earmarked for the second installment of the wetland reserve program.

The increase in CRP spending comes despite Congress's denial of the administration's request to enroll an additional 1 million acres in the program. The program is losing support in Congress and the General Accounting Office recently criticized the program's cost. The wetlands program, which received no money last year, got $66.7 million this year, to be used in 20 states to pay farmers to restore wetlands. The administration originally wanted $370 million.

Bureau of Land Management	($000)
Lands & Resources Mgmt.	599,860
Energy & Minerals	70,876
Range Management	47,441
Transfer to NBS	-692
Maintenance	32,809
Recreation	49,903
Cultural Resources	11,801
Wilderness Mgmt.	12,998
Recreation Resources	25,253
Transfer to NBS	-149
Resource Mgmt. Planning	9,834
Soil, Water & Air	20,191
Transfer to NBS	-1,395
Wild Horses & Burros	16,952
Transfer to NBS	-249
Wildlife Habitat	50,106
Transfer to NBS	-2,575
Land Acquisition	12,122
Acquisition Management	1,277
Forest Ecosystems	1,500
Range Improvements	10,025
O&C Grant Lands	83,052
Payments in Lieu of Taxes	104,108
Firefighting	117,143
Transfer to NBS	-395
Emerg. DOI firefighting	116,674
Total Agency	1,070,388

The Bureau of Land Management got a 4.1% increase ($42.1 million), roughly half that sought by the Clinton administration. Most of the new money will go for a new computer system (+$36.2 million), wildlife habitat management (+$13.5 million), and range management (+$4.9 million), while the big loser is the land acquisition account (-$15.7 million).

The hottest potato in the BLM budget is the grazing and rangeland reform proposal (mentioned earlier). The proposal calls for an 85% increase in public land grazing fees ($1.86/animal unit month (AUM) to $3.45/AUM) to be phased in over three years. An AUM is the amount of forage needed to feed a cow for one month. The fees would affect grazing on public lands and national forest in 17 Western states except national forests in Texas, which are regulated under a different law.

The August proposal by Babbitt increased the fees to $4.28 during the same time frame. The fee in 1994 will be $2.39/AUM, rising to $2.92/AUM in 1995 and $3.45 in 1996. Starting in 1997, the fees would be calculated under a new forage value index formula that is tied to private land rates, but the fees could not change by more than 15% per year, according to the compromise worked out in the conference. Grazing advisory boards would be replaced by resource advisory boards with broader representation and a 20 to 70% surcharge would be collected from grazing permit holders who sublease to others. Wells, reservoirs and other new permanent range improvements would be owned by the federal government as would new water rights. The compromise also expands the types of activities that can be paid for by the rangeland improvement fund.

Although most of the Babbitt proposal was included in the congressional plan, several features were dropped:

- shortening permits or leases to 5 years or less from the current 10 years for new permittees and others who have not complied with permit terms and conditions.

- expanding citizen participation in the rangeland management program by redefining *affected interests*.

- rangeland managers also will not be looking at a permit holder's stewardship of the land and permit compliance when deciding how to allocate extra available forage. Instead, the Interior secretary would develop standards that *establish minimum conditions for the protection of rangeland ecological health.*

The $18 million increase for range and habitat management backs up the administration's request to boost funding for riparian repair, Northwest salmon fisheries, and endangered species. The agency's *Riparian Initiative* aims to restore three-quarters of its 7 million acres of streamside acreage by 1997. The fiscal 1994 money is aimed at tree plantings, stream bank stabilization and nesting boxes on 350,000 acres, as well as for evaluation of another 1.7 million acres. Similar work would be done in the Northwest to help salmon fisheries. Additional money would be spent on endangered species to help listed species recover and prevent others from having to be listed. Also, $2 million more will be spent on wilderness planning.

Bureau of Reclamation	($000)
General Investigations	13,819
Construction	464,423
Operations & Maintenance	282,898
Total Agency	901,527

The bureau's budget got a shot in the

arm this year, reversing the downward trend of the last several years. Spending will rise $91.4 million, or 11.3%.

EPA	($000)
Operating Programs	2,625,695
Research & Development	338,701
State Grants	
Clean Lakes (Sect. 315)	5,000
Water Treatment Const.	2,477,000
State Revolving Loans	1,218,000
Drinking Water Loans	599,000
Special Project Grants	558,000
Non-point Source (Sect. 319)	80,000
Coop. Agreements (Sect. 104)	22,000
Superfund	1,480,853
Leaking Underground Tanks	75,379
Total Agency	6,658,927

EPA's budget would suffer its first decline in years, dropping $264 million, or 3.8%. Conferees agreed to the Senate request for a $1 million study by the National Academy of Public Administration of the agency's:

- assessment of environmental risks,
- spending priorities, and
- effectiveness of its current structure in addressing environmental problems.

Of the nearly $2.5 billion to be spent on water treatment, $500 million will not become available until May 31. The $599 million for the new drinking water fund is contingent upon Congressional authorization. Conferees also agreed with the administration's $80 million request to beef up non-point source pollution grants that are aimed at helping states develop and implement plans to control wet weather runoff from cities and farmland.

Fish and Wildlife Service	($000)
Resource Management	484,313
Habitat Conservation	42,425
Endangered Species	58,703
Consultation	14,416
Listing	7,409
Prelisting	4,360
Permits	2,968
Recovery	29,968
Env. Contaminants	12,674
Transfer to NBS	-3,705
Fisheries	67,320
Transfer to NBS	-965
Trans to Partners in Wildlife	-500
Law Enforcement	34,687
Migratory Bird Mgmt.	17,649
Transfer to NBS	-2,415
Nat'l Wetlands Inventory	7,907
Transfer to NBS	–
Refuge O&M	165,977
Transfer to NBS	–
Research & Development	–
Land Acquisition	82,655
Acquisition Mgmt.	8,500
Nat'l Wildlife Refuge Fund	12,000
N. Amer. Wetl. Cons. Fund	12,000
Coop. End. Species Cons.	9,000
Construction & Anad. Fish	74,992
Transfer to NBS	-1,427
Total Agency	682,402

The 5.3% cut for the Fish and Wildlife Service, due to the transfer of more than $100 million in research and development and other programs to the new National Biological Survey, masks significant increases in spending for endangered species, refuge operations, land acquisition and habitat conservation. The endangered species program got a 50% hike (+$19.5 million), including a big boost to address the backlog in species recovery planning and implementation (+$9.5 million or 47%). The agency also will have new funds to increase consultations with other federal agencies to protect listed species (+$5 million or 52%). Similar habitat conservation planning assistance to state and local governments and private landowners also will get a boost (+5.9 million or 16%). The agency manages 94 million acres of public land, including 498 national wildlife refuges and 28 wetland management districts.

The Fish and Wildlife Service was the only land management agency that bucked the trend in land acquisition spending. Clinton wanted to cut last year's spending by $20 million but Congress instead increased funding by more than 9% ($7 million). Two of the most expensive purchases approved by Congress were the Cache River in Arkansas, and Cypress Creek NWR in Illinois. An additional $1 million will be used to buy inholdings and $5 million will go to the National Fish and Wildlife Foundation.

Forest Service	($000)
National Forest System	1,304,891
Mineral & Land Activities	127,219
Range Management	46,219
Recreation Use	238,116
Cultural Resources	29,563
Recreation Mgmt.	179,400
Wilderness Mgmt.	29,153
Reforestation & Timber Stand Imp.	91,975
Soil, Water & Air	79,797
Timber Sales Admin.	197,093
Trail Maintenance	35,197
Wildlife & Fish Habitat	127,317
Land Acquisition	64,250
Acquisition Mgmt.	8,500
Construction	249,002
Road Construction	97,345
Trail Construction	32,310
Forest Research	193,083
State & Private Forestry	168,107
Emerg. Pest Suppression	(15,000)
Firefighting	190,108
Emergency Fire Fighting	190,222
Total Agency	2,372,770

The Forest Service eked out a 1.2% increase ($27.6 million) in spending with hikes in state and private forestry programs (+11.9 million or 7.6%), fish and wildlife habitat programs (+$10.4 million or 8.9%), forest research (+10.4 million or 5.7%) and trail construction and maintenance (+$8.8 million or 15%). An additional $7.5 million will be spent on maintenance and repair at recreational sites, more than $30 million on watershed and ecosystem restoration, while $16.4 million is earmarked for community assistance and old-growth diversification projects in the Northwest. Offsetting those hikes are substantial drops in the timber sales program (-$26.8 million or 12%), and road construction (-$43.2 million or 30.8%).

The Forest Service received $64.25 million for land acquisition, a slight increase. One of the most expensive projects is a $3 million purchase in the Gallatin National Forest in Montana. Conferees included $1.25 million for purchase of in-holdings in the Colorado wilderness areas, $2 million for acquisitions along the Appalachian Trail and $1.75 million for emergencies and in-holdings.

Congress provided enough money to fund the timber sale program proposed by the Clinton Administration in April, although no region-by-region goals are set. The Clinton budget included money to offer 4.6 billion board feet (bbf) of timber for sale in fiscal 1994, but as little as 4.1 bbf may be offered depending on how much habitat is set aside to protect salmon in the Northwest and the Mexican spotted owl in the Southwest. Clinton anticipated a timber harvest of 6.8 bbf in fiscal 1994. Up to $26 million of salvage timber sale money was made available to do assessment work on the watersheds of the Northwest, with a report due Dec.15 on how the money will be spent. An additional $20 million is included in the construction account for watershed restoration.

National Biological Survey	($000)
Research	82,388
Species Biology	21,126
Population Dynamics	13,943
Ecosystems	47,319
Inventory and Monitoring	21,717
Tech. Dev. and Transfer	13,883
Cooperative Research Units	15,460
Facilities O&M	15,718
Administration	14,110
Total Agency	163,519

The new National Biological Survey, which aims to catalogue, research and disseminate information on the nation's biological resources, got $163.5 million in start-up money, more than 91% of the total requested by the administration. About $8 million was denied because the national wetlands inventory is, by law, a Fish and Wildlife Service program. Congress also didn't go along with the size of the increase for the cooperative research unit program, or the full request for administration. Reacting to growing concerns over the survey's potential effect on private property, conferees included language denying the use of funds for surveys on private property without written consent of the landowner. Conferees also struck Senate language allowing the new agency to use volunteers and accept donations of land, buildings and equipment from public and private sources. Conferees also urged the authorizing committees to *act promptly to clarify the mission and responsibilities* of the agency. Similar concerns raised in the House earlier this month caused a delay in approval of a bill (H.R. 1845) authorizing creation of the agency.

National Park Service	($000)
Park System Operation	1,061,823
Resource Stewardship	222,570
Transfer to NBS	-31,387
Visitor Services	229,751
Maintenance	396,815
Park Support	161,293
Land Acquisition (total)	92,250
Park Service acquisition	58,950
Acquisition Mgmt.	8,247
State LWCF Grants	24,750
State Admin. Expense	3,303
Construction	201,724
Nat'l Rec. & Pres.	42,585
Historic Pres. Fund	40,000
Urban Park & Rec. Fund	5,000
Total Agency	1,437,261

The National Park Service got a $54.5 million funding hike (3.9%), that would have been higher if a $31 million transfer to the National Biological Survey was factored in. More than $90 million in added funding for maintenance and other park operations was partly offset by cutbacks in the federal land acquisition program (-$22.7 million) and construction (-$28.1 million).

Congress agreed to the administration's request of $6.853 million next year for the rivers and trails conservation program, down slightly from fiscal 1993. Conferees also agreed to the administration and House proposal to resume funding for the urban parks and recreation program, which gives money to cities to restore park and recreation areas.

The agency's land acquisition program took the biggest hit this year of the four land management agencies, dropping 19% to $95 million. Included among the 23 federal acquisitions is $6 million for the new Little River Canyon National Preserve in Alabama. In addition, $6 million will be spent to acquire land along the Appalachian Trail and $3.865 will be spent on in-holdings, emergencies and hardships. States will share $24.75 million for matching grant projects.

Soil Conservation Service	($000)
Conservation Operations	591,049
River Basin Surveys & Investigations	13,482
Watershed Planning	10,921
Watershed & Flood Prev.	241,965
Resource Cons. & Dev.	32,945
Great Plains Cons. Program	25.658
Total Agency	916,020

The Soil Conservation Service, also scheduled for revamping by the administration, got a 3.1% increase, (+$27.3 million). The administration's request reflects the movement of most of the technical assistance programs to a proposed Farm Service Agency. More than half the increase is to help farmers develop conservation compliance plans that need to be in place by the end of 1994. Congress also approved almost $100 million more than the administration wanted for construction of local watershed and flood prevention projects.

Corps of Engineers	($000)
Construction	1,400,875
Env.Modifications (sec. 1135)	8,130
O&M	1,688,990
Wetlands Research Program	5,283
General Investigations	207,540
Regulatory Program	92,000
Total Agency	3,907,130

Congress didn't go along with the Clinton administration on the Army Corps' civil works budget. While Clinton sought a $41.7 million cutback, Congress added nearly $240 million to the agency's budget for the new year. Included under the construction account is a $145 million appropriation for continuation of the Red River lock and dam project in Louisiana. The section 404 wetland permitting program got an extra $6 million, while the Kissimmee River restoration project in Florida got $5 million.

Source: Land Letter, SPECIAL REPORT, October 20, 1993, Vol. 12, No. 28.

River Federation to Inaugurate Profiles in River Management

The River Federation (trade name for the National Association of State and Local River Conservation Programs) will begin publication in 1994 of a continuing series of detailed fact sheets, called *Profiles in River Management*.

The Federation's aim is to better prepare river professionals and leaders on the use of these important tools and techniques, and to provide specific information about the nature of these techniques, why they are important, and how to get them directly to those citizens and public officials working on river studies and management across the country.

Executive Director Chuck Hoffman says that the profiles will offer immediate help to river planners and leaders across the country. *When we begin river conservation projects, we face tremendous uphill struggles in educating planning participants, the media, local officials, and the public in how river protection is done, from the basic issues of how partnerships are formed to the River Federation, particular zoning techniques a community might employ to manage its land base. Much of this factual background is the same for everybody in the country. The River Federation Board believes we can help a lot of groups and agencies by preparing concise profiles on these most common management tools, and getting this information out through our leadership network to the people who need it. Since our budget is small, the profiles will be designed for duplication by the agencies and groups using them. This way we can cover a lot of ground on a small budget with each new edition.*

The profiles will have a common format. Each edition of Profiles in River Management will present the following information:

- A description of the type of problem that can be addressed by the technique or program,
- A definition of the technique and its components,
- The individual steps followed in employing the technique,
- An explanation of how the technique fits into the overall river management or planning process,
- An estimation of the costs or resources needed to employ the technique,
- A description of the results that can be expected from employing the technique,
- Sources of additional information, and
- References or footnotes

For more information contact: River Federation, 8630 Fenton St., Suite 910, Silver Spring MD 20910, (301) 589-9454.

Arkansas Takes Action to Protect the Alligator Snapping Turtle

The alligator snapping turtle *Macroclemys temmincki* is the largest freshwater turtle in North America. Its distribution is restricted to the central and southeastern United States. It is known to live well in excess of 100 years and frequently exceed 100 pounds, reaching as much as 250 pounds.

Heavy exploitation rates and declining populations have been observed throughout its range. Most states protect it from harvest, but Arkansas was one of few states with significant enough populations to allowed harvest.

In October, Arkansas Game and Fish Commission (AFGC) Director Steve Wilson signed an Emergency Proclamation banning its harvest. A team with representation from several divisions of AGFC is now working to frame the final form of regulations to implement this ban. Issues still in question include the fate of currently operating captive breeding operations.

AGFC Endangered Species Chief Rex Roberg says that the status of this species is up for review by the USFWS in 1995, and any efforts that can be made to avoid its listing as an endangered species would be in the best interest of the State and the public.

Most response from the public has been very supportive of the AGFC in this action. The only questions that have arose regard the culture of the species, an issue that will prove difficult to address to the satisfaction of all.

Source: The Lateral Line, Vol. 7, No. 2 (Newsletter of the Arkansas Chapter of the American Fisheries Society).

'Wise Use' Movement Now Wants Ownership of Our Wildlife

The following article by Bob Ekey appeared in the Fall 1993 edition of the *Greater Yellowstone Report*. Since it has implications to fish and fishing as well as wildlife and hunting, we thought it was worth reprinting here in its entirety:

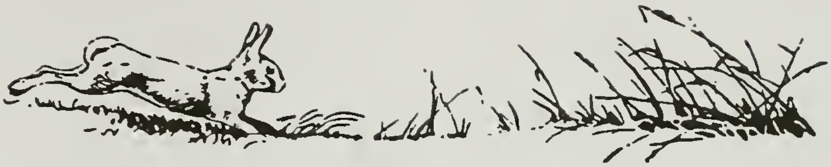
The so-called "Wise Use Movement," which tries to convert public lands to their private gain, now wants our wildlife.

A well-known anti-environmental movement attorney has filed a lawsuit against the State of Wyoming and its Fish and Game Commission, contending that private property owners should have complete control over wildlife that roam on their land.

If successful, the lawsuit would turn over wildlife management to landowners, who would decide how many elk, deer, moose, antelope and other game would be shot, and who would do the hunting.

In short, the lawsuit seeks to throw wildlife management solely to the market place, where a new royalty of the landed and monied would purchase or control hunting privileges.

It is surprising that the anti-environmental movement has picked a fight that overwhelmingly runs counter to our culture and tradition - and is an insult to the sportsmen and conservationists who have worked for decades to restore wildlife populations to the high levels found today.



When this country was being settled, there were no game laws that managed wildlife. It was a time when wildlife was controlled only by the market place. Buffalo and beaver were hunted to near extinction, and elk and deer populations reached all-time lows. Sportsmen, under the leadership of Teddy Roosevelt, George Bird Grinnell, Bob Marshall, and others, began working to recover game populations.

Jim Posewitz, who recently retired from the Montana Department of Fish, Wildlife and Parks, recalls the time when game populations had dwindled and sportsmen said, "no more," and began working to restore populations.

"This was American conservation's finest era, its age of purity," Posewitz wrote. "Wildlife populations recovered and prospered. Other movements such as wilderness conservation evolved into organizations of their own and they too had their origins around the hunter's fire."

This populist movement still benefits us all today. With states managing wildlife and hunting regulations, everyone has equal opportunity to hunt and fish. Private landowners, while they do not control the wildlife, control access to their land, which is the way it should be. They can control which licensed hunters have access to their land, and they can charge trespass fees.

What they can't control is the deer, elk, or moose on their land, which is what the lawsuit wants. The lawsuit would essentially privatize the wildlife.

Unfortunately, market forces only work for wildlife as long as they are the best and highest paying use of the land. If another land use generates more cash for the landowner, wildlife will disappear. If landowners over-hunt, wildlife will disappear, as they once did.

If the lawsuit is symptomatic of other problems - that landowners are frustrated that they are expected to feed large herds of wildlife - then other options for cooperative agreements should be explored. But wildlife should remain the property of the public.

Fortunately, the lawsuit has little merit. The Public Trust Doctrine - common law that rules our rivers, seas, air and wildlife are the public domain - has been challenged many times, but courts have consistently ruled that wildlife and other resources belong to *the public and should be managed by the states.*

That is a rich tradition that the anti-environmental movement seeks to destroy. While this lawsuit may have little legal merit, it illustrates the true colors of the Wise Use Movement - a group that would strip all our rights away in its quest for private gain.

Of the three ranchers filing the lawsuit, one is a Texas millionaire who owns a Wyoming Ranch. The attorney for the lawsuit is Karen Budd, who has represented the anti-conservationist Wise Use Movement on other issues.

Make no mistake. The "Wise-Use" movement wants our wildlife, and with it the rich tradition that allows everyone equal opportunity for quality hunting, fishing, and recreation.

Bringing Hydropower Down to Size

Hydropower doesn't depend on building mega projects. Mini-and micro-hydro projects are being used by developing countries to drive mills or produce electricity for people in remote areas who might otherwise remain in the dark.

Micro-hydro facilities generate power the same way larger hydro schemes do, by using the energy of falling water to turn a turbine - which is essentially a specialized wheel. The mechanical power of the spinning turbine drives an electrical generator or is used directly, to drive a saw mill for example.

While the term *small* is sometimes used to refer to all hydro projects with dams below 15 meters in height, the power industry commonly groups *small* hydroelectric projects into three categories based on their electrical generating capacity: micro- (below 100 kW), mini- (100 kW to 1 MW), and small-hydro (1 MW to 50 MW).

Micro-hydro is ideally suited for providing power to rural and isolated communities where the cost of extending transmission lines from the central power grid is prohibitively expensive. Unlike large-hydro schemes, micro-hydro can be built using local labor and materials, under the direction and control of local communities, reducing or eliminating dependence on outside resources and expertise. Furthermore, micro- hydro plants require little capital investment, have short lead times, and build local capacity and skills.

Because a dam is rarely needed, and a weir does not block the river's flow, most environmental impacts associated with large projects are avoided. Fish passage is not blocked, no land need be flooded nor people displaced. Weirs are often constructed from locally available materials - such as timber, stones and earth - avoiding the need for costly imported steel and concrete. In some constructions, silt is able to pass through the weir. If damaged or washed out by extreme flood events, weirs are easily reconstructed after the flood has passed, with the added benefit that sediment deposits are removed by the flood flows.

Micro-hydro is often the most cost effective method for bringing electricity to rural communities.

Source: World Rivers Review, Vol. 8, No. 2, Second Quarter, 1993.

Ecosystem Management By Watersheds

A new strategy is evolving within the USDA Forest Service -- Management by Watersheds. This strategy is designed to fulfill the mandates of four key environmental laws, help solve critical environmental problems such as the endangered salmon issue in the Pacific Northwest, and help achieve Ecosystem Management goals by maintaining ecological processes that sustain biophysical watershed and aquatic systems.

Management by Watersheds is based on the Organic Act of 1897, the Endangered Species Act of 1973, the National Forest Management Act of 1976, and the Clean Water Act of 1987. These laws require the Forest Service to secure favorable conditions of water flows on its lands by ensuring healthy watersheds and streams; preserve and restore the physical, chemical, and biological integrity of waterbodies; and protect soil productivity, aquatic habitat, and species viability.

Management by Watersheds means that watersheds in National Forests are managed as ecosystems so that their hydrologic function sustains a balanced range of hydrologic conditions typical of healthy watersheds and streams. Watersheds form natural ecological units within which inputs of energy and water are synthesized with geomorphology, soils, and vegetation, producing an array of land and water forms and a range of hydrologic functions and processes. The balanced range of conditions sustained by hydrologic function of a healthy watershed includes:

- Integrity of the Soil: soil structure, organic matter, nutrients, and biological processes are preserved.

- Integrity of Streamflow: The watershed acts like a sponge and exhibits high infiltration rates that regulate runoff and recharge aquifers.

- Integrity of Stream Channels: Channel form, function, and processes are in dynamic equilibrium and gully erosion is absent or rare.

- Integrity of Water Quality and Aquatic Habitat: Aquatic life is diverse and productive, and a balanced range of aquatic habitats are present.

- Integrity of Aquatic Gene Pools: All phenotypes and genotypes of fish and other aquatic life are preserved.

As the portion of Ecosystem

Management that sustains watersheds and aquatic systems, *Management by Watersheds* seeks to maintain healthy watersheds through land stewardship and to restore ailing watersheds through restoration measures. The program includes analysis, management, and monitoring components.

Each watershed would be analyzed to diagnose its health in terms of its ability to provide favorable conditions of water flows, as well as the management factors contributing to the present watershed conditions. The level of analysis might vary depending on watershed values and their exposure to various risks.
The analysis would establish a *Desired Watershed Condition* that defines a healthy watershed. This desired condition is actually a range of conditions for certain land and stream attributes typical of the dynamic equilibrium found in healthy watersheds and streams in the local geoclimatic area. The *Existing Watershed Condition* would then be diagnosed relative to the desired condition, using the same land and stream attributes. This approach defines a range of natural variability and assesses deviations from that range.

The analysis would evaluate specific contributors to the existing watershed condition by analyzing the effects of management activities on the same land and stream attributes. This analysis would consider both inherent watershed hazards and the level of disturbance of activities in the watershed.

The results of watershed analysis would help drive the management program for each watershed, implemented through the Forest Service's Nonpoint Source Management Strategy. The general approach in each watershed would be as follows:

- If watershed health is good (within the range of natural variability) and is stable or improving land disturbing activities could continue at their present rate or perhaps even accelerate.

- If watershed health is good but declining, land disturbing activities would have to be slowed or adjusted through more rigorous application of watershed conservation practices.

- If watershed health is poor (outside the range of natural variability), the only land disturbing activities which could occur would be those that contribute to watershed recovery, and a watershed restoration program might be applied until good watershed health is restored.

Each watershed would be monitored on the regular 10- to 15-year cycle of Forest Plan revisions to track progress in restoring and maintaining watershed health. Monitoring would focus on the same land and field attributes mentioned above. The watershed management program would be adjusted as indicated by monitoring results.

Major fires and floods occur in cycles in natural systems, and between such extreme events a healthy watershed operates in *Dynamic Equilibrium*. Streamflows and sediment yield, watershed and stream channel stability, water quality and aquatic habitat and biota vary within some *Range of Natural Variability*. An extreme event throws the watershed out of equilibrium, but it immediately begins to recover to the prior, or new, range of natural variability.

The intent of *Management by Watersheds* is to maintain this balanced range of conditions between the extreme events; to avoid actions that would throw a watershed out of equilibrium or increase the frequency or severity of major events; and to speed rather than impede a watershed's recovery from such events.

Major events will still occur, but management actions should not make any watershed more susceptible to damage or further stress an unbalanced system. A prudent level of land disturbing activities can occur in a watershed that yet maintains its health. As long as floods or droughts are not worsened, sediment loads and bank erosion are not substantially increased, rills and gullies and landslides are not accelerated, and water quality and aquatic habitat features are maintained within the balanced range, a watershed will remain healthy.

Land and stream attributes of watershed health reflect the physical processes affected by climate, geomorphology, and management, as well as the values at risk in the watershed. The range of natural variability of these attributes indicates good watershed health and enables deviations from this range to be discerned.

The range of natural variability for these attributes would be defined for each land and stream type within a given geoclimatic area. For example, in each such area, the range of attributes for each stream type would be established by sampling minimally disturbed reaches of that stream type throughout the area.

Management by watersheds demands a change. Watersheds must be recognized and managed as basic ecosystems. An interdisciplinary approach is needed in which all Forest Service employees consider watershed management to be critical. A permanent commitment of policy and resources is needed to place this program at the heart of the Forest Service mission. By building a structured program that maintains healthy watersheds and restores ailing ones, the Forest Service can assume a leadership role in managing lands wisely for the good of future generations.

To provide comments or obtain more information contact: Warren Harper, Water Resources Program Manager, USDA Forest Service, Watershed and Air Management, 201 14th St., SV/, Washington, DC 20250.

Source: Non-Point Source News Notes, October 1993, #32, c/o Terrene Institute, 1717 K Street, N.W., Suite 801, Washington, D.C. 20006. This article was prepared by Jim Maxwell, Regional Hydrologist USDA Forest Service, Rocky Mountain Region, Lakewood, CO.

Meetings of Interest

February 26-March 1, 1994, 1st Annual Meeting of the Lower Mississippi River Conservation Committee, Camelot Hotel, Little Rock, AR. Contact: Mike Armstrong, Arkansas Game and Fish Commission, 2 Natural Resources Drive, Little Rock, AR 72205. The Lower Mississippi River Conservation Committee (LMRCC) will be holding their First Annual Meeting in conjunction with the Southern Division of the American Fisheries Society Mid-Year Technical Session. The LMRCC is a recently formed organization of state conservation agencies bordering the lower Mississippi River (confluence of the Ohio River to the Gulf), and a cooperator of MICRA's.

March 15-17, 1994, 50th Annual Meeting of the Upper Mississippi River Conservation Committee, Radisson Hotel, LaCrosse, WI. Contact: Kurt Welke, Wisconsin Dept. of Natural Resources, 111 West Dunn St., Prairie du Chien, WI 53821. (608) 326-0233. The Upper Mississippi River Conservation Committee (UMRCC) is one of the oldest, if not the oldest, standing interstate/interagency cooperative group in the nation dealing with river management issues. The UMRCC is a MICRA cooperator, and much of the MICRA organization is patterned after tried and proven UMRCC procedures. The UMRCC deals with Mississippi River management issues from the confluence of the Ohio River upstream to the Twin Cities.

April 19-22, 1994, Rivers Without Boundaries, The Second Bi-annual ARMS Symposium on River Planning and Management, Holiday Inn, Grand Junction, CO. Contact: Caroline Tan, ARMS Program Director, (510) 655-5844. The American River Management Society (ARMS) believes that rivers should no longer be managed in terms of boundaries, be they administrative, property or special interest. Through a coordinated interagency effort, the ARMS proudly present *Rivers Without Boundaries*. Join resource managers, planners, researchers, outfitters, river users, landowners, and conservationists in taking a holistic approach to ecosystem river basin management. The conference will explore solutions for coordination, cooperation and consensus in the management of river systems.

April 27-28, 1994, 26th Annual Meeting of the Mississippi River Research Consortium, Holiday Inn, LaCrosse, WI. Contact: Charles Theiling, Mississippi River Research Consortium, Inc. (MRRC), 575 Lester Avenue, Onalaska, WI 54650. (618) 259-9027. The MRRC is a non-profit regional scientific society concerned with the ecology and management of the Mississippi River. The purposes of the MRRC are to encourage communication between the scientific community and the public, encourage pure and applied research concerning the water and land resources of the Mississippi River Valley, and hold an annual meeting where research results can be presented and common problems can be discussed

April 17, 1994, The International Erosion Control Association 25th Annual Conference and Trade Exposition, Reno, NV. Contact: IECA, P.O. Box 4904, Lincoln Avenue, Suite 103B, Steamboat Springs, CO 80477-4904. (303) 879-3010. FAX: (303) 879-8563. Topics include innovative applications for solving erosion control problems; soil bioengineering methods and techniques; wind erosion in arid environments; erosion control for urban construction sites; streambank and shoreline stabilization; steep slope stabilization; how to meet permit requirements; erosion control in the third world; and research and development.

April 17, 1994, Responses to Changing Multiple-Use Demands: New Directions for Resources Planning and Management, Nashville, TN. Contact: Ralph H. Brooks, General Chairperson, Tennessee Valley Authority, Water Management, Evans Bldg., Rm. 1W 141, Knoxville, TN 37902. (615) 632-6770. American Water Resources Association Annual Spring Symposium. Topics will include water use trends, water- resources forecasting, hydrologic modeling, GIS tools, water pricing policies, water allocation, water law, BMPs, environmental impact mitigation, reservoirs, and hydropower licensing.

August 3-6, 1994, Sixth International Symposium On Regulated Streams (SISORS II). The University of South Bohemia, Ceske Budejovice, Czech Republic. SISORS II is the sixth in an on-going series of International Symposia devoted to scientific research of rivers modified by large dams, weirs, channelization and flow diversion schemes. Contributed papers are invited on the following topics:

- Effects of dams, weirs, channelization or inter-basin transfers of plankton, macro-invertebrates, periphyton, macrophytes and fish;
- Effects of river regulation on estuarine, wetland and floodplain ecology;
- Water of river-reservoir systems;
- Fisheries management;
- River restoration;
- Conservation of river margin and floodplain systems;
- River regulation and integrated basin management.

Contact: Professor G.E. Petts, Department of Geography, University of Technology, Loughborough, Leicestershire, LEII 3TU, UK.(Fax: 509 262192), or Dr. K. Prach, Faculty of Biological Sciences, Jihoceska Univerzita, Branisovska 31, 37005, CESKE BUDEJOVICE, Czech Republic. (Fax: 038 45985).

Congressional Action Pertinent to Mississippi Basin Rivers

Biodiversity

H.R. 1845. On Oct. 6, the House began debate on H.R. 1845, which authorizes creation of National Biological Survey as a new agency in the Interior Department.

Coasts

S. 1405. On Sept. 15, a Senate banking panel concluded a two-day hearing on S. 1405, which reforms national flood insurance program.

H.R. 3191. (Kennedy, D-Mass.) On Oct. 6, a House banking panel approved an amended H.R. 3191, which reforms the national flood insurance program.

Endangered Species

A House Merchant Marine panel held a hearing Oct. 13 on incentives to encourage habitat and species conservation by private landowners.

S. 1521 (Shelby, D-Ala.) reauthorizes the Endangered Species Act, providing compensation for substantially diminished property values due to the act and mandates exclusion of critical habitat when economic impact is too great.

Fish and Wildlife

House Merchant Marine panel held hearing Oct. 5 on an Office of Technology Assessment report, *Introduction of Harmful Non-indigenous Species into the United States*.

S. 1526 (Inouye, D-Hawaii) provides statutory authority for fish and wildlife management on Indian lands.

Floodplains

S. 1670 (Harken, D-Iowa) improves hazard mitigation and relocation assistance in connection with flooding and for other purposes. Acquired properties would be returned to open space, recreational or wetlands management practices. Passed both the House and Senate and cleared for President Clinton's signature on November 20th.

Forests

H.R. 873 (P.L. 103-91). On Oct. 1, President Clinton signed. Authorizes land exchanges and purchases to add 80,000 acres to Gallatin National Forest in Montana.

S. 1381 (P.L. 103-106). On Oct. 12, President Clinton signed. Extends authorization and provides more spending flexibility for the National Forest Foundation.

Parks

H.R. 3252. On Oct. 13, the House Natural Resources Committee approved adding land to West Virginia parks.

Public Lands

H.R. 2010 (P.L. 103-82). On Sept. 21, President Clinton signed, the national service bill that creates a Public Land Corps for teenagers and young adults aged 16-25 to do disaster relief work and conservation work on public land, Indian and Hawaiian home lands.

H.R. 2520. On Sept. 29, the House voted 314-109 to disagree with the Senate provision in the Interior appropriations bill, H.R. 2520, that bars funding in fiscal 1994 for the Clinton administration to pursue its grazing fee hike and rangeland management reform.

S. 1170. Senate Energy panel held hearing on S. 1170, which opens up naval oil shale reserve land in Colorado to oil and gas leasing.

S. 1504 and S. 1505 (Hatfield, R-Ore.). Authorizes $500 million in assistance to retrain loggers and others who lost jobs due to environmental laws and requires the Interior Department to do an economic impact statement when land is proposed for withdrawal from public or commercial use.

Recreation

On Sept. 23, a House Natural Resources panel held a hearing on **H.R. 1477**, which transfers management of Canyon Ferry Reservoir from the state of Montana to the Bureau of Land Management.

Water and Wetlands

S. 1304. On Sept. 15, a Senate Environment panel held a hearing on S. 1304, a wetland protection bill.

S. 1114. On Sept. 15, a Senate Environment panel concluded hearings on **S. 1114**, a Clean Water Act reauthorization measure.

H.R. 2604. On Sept. 21, the House approved H.R. 2604, which authorizes establishment of a wetlands policy center on a 7,000-acre tract in Brownsville, Texas.

H.R. 1116. On Sept. 23, a House Science panel held a hearing on **H.R. 1116**, which creates a demonstration technology grant program and redirects EPA water pollution research toward non-point source pollution, wetlands restoration, groundwater pollution and contaminated sediments.

On Sept. 28, a House Merchant Marine panel held a hearing on the Clinton administration's wetlands policy.

H.R. 3213. (Hefley, R-Colo.) bars EPA from assessing penalties for single biomonitoring test failures at publicly owned water treatment facilities but allows for enforceable compliance schedules and penalties for repeated violations of effluent permits.

S. 1542 (Bingaman, D-N.M.) and **H.R. 3287** (Schiff, R-N.M.). Authorize EPA grants for wastewater treatment for unincorporated communities.

Wild & Scenic Rivers

H.R. 914. On Sept. 29, the House Natural Resources Committee approved H.R. 914, which designates 19 miles of the Red River in Kentucky as wild or recreational river.

H.R. 3252. On Oct. 13, the House Natural Resources Committee approved an amended H.R. 3252, which designates 14.5 miles of the New River in West Virginia as scenic river and directs the Park Service to study possible addition of the Elk River to the wild and scenic system.

Source: STATUS REPORT Land Letter, October 15, 1993

Merry Christmas!

U.S. Department of the Interior
Fish and Wildlife Service
Large River Fishery Coordination Office
608 East Cherry
Columbia, Missouri 65201

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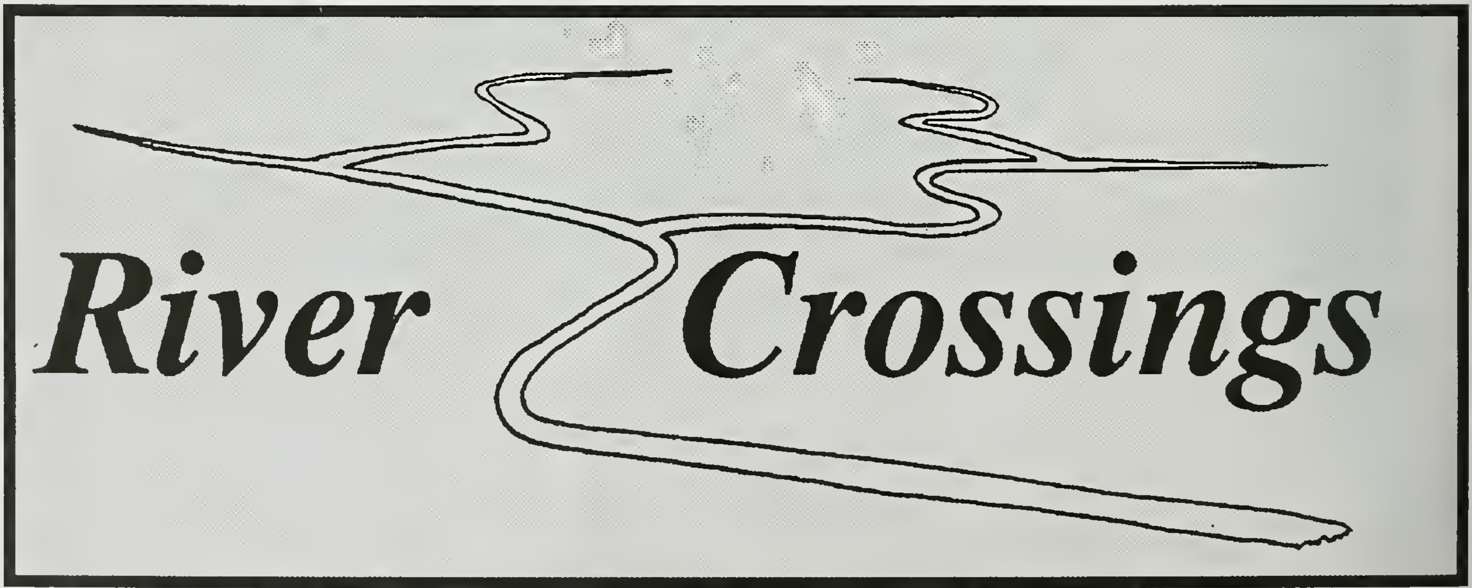

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